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A Quantitative Analysis of the Production, Selection, and Career Paths of Texas Public School Administrators

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A Quantitative Analysis of the Production, Selection, and Career Paths of Texas Public School Administrators

by

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Dissertation

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Dedication

This dissertation is dedicated to Walter D McCracken, my maternal grandfather. He was a World War II veteran, an insatiable consumer of research, and for those that were privileged enough to know him – one of the most intelligent persons they could ever hope to encounter. He was self-educated.

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I want to start off by stating that I cannot possibly acknowledge everyone who deserves recognition in this space without writing what would amount to a second dissertation – there are so many of you out there.

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Andy has a similar story in that he went back to graduate school while holding down a full time gig and starting a family with his wonderful bride Ashley. Andy taught me that finding a balance in life may not be easy, but it's definitely possible and definitely worth it. Thanks "Bopper".

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this accomplishment would not have been possible without your support. I love you more than anything and eagerly look forward to the rest of our lives together.

A Quantitative Analysis of the Production, Selection, and Career Paths of Texas Public School Administrators

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The University of Texas at Austin, 2012

Supervisor: Mark A. Gooden

Using state-wide, longitudinal data on Texas public school educators employed between the 1991-1991 and 2010-2011 school years, this study explores the disproportionate selection of campus leaders based on ethnicity and gender. Through a combination of descriptive and inferential techniques, this study illustrates how trends in the production, selection, and career paths of administratively-certified educators at the various intersections of ethnicity and gender have changed over time. Controlling for a variety of individual work history and campus characteristics, this study also explores how an administratively-certified educator's ethnicity and gender affect their probability of procuring a campus leadership position.

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Chapter One: Introduction

As the 21st century grew near, many scholars of educational administration were focused on the purported, upcoming, nation-wide shortage of certified school administrators. In the years that followed, studies began mounting that illustrated this shortage was largely overstated. Since that time, two new research foci have emerged in the field; 1) measuring and improving the effectiveness of leadership preparation programs (LPPs), and 2) understanding the production, distribution, and career paths of school administrators. This study contributes to the knowledge of the latter pursuit.

Over the last decade, educational administration research has expanded our knowledge of the leadership pipeline. We are learning more about the candidates entering LPPs and seeking administrative positions in our public schools. For the first time we have large-scale, quantitative research providing information on the distribution and career paths of campus administrators in certain states. Still, much is to be learned about the administrator selection process for the greater part of the country. Further still, much is to be learned about the

conditions contributing to administrators' moves in and out of schools and the education system itself.

While the aforementioned studies provide nuanced information about administrator distribution and career paths in certain parts of the nation, their collective generalizability cannot account for the distinct and varying contexts within the state of Texas. Nor do they deeply explore the social factors at play in the sorting of educators into and amongst administrative positions.

Naïve analysis of state-wide administrative data on Texas public school educators reveals striking disparities in administrative role-assignment across both ethnicity and gender. Certain ethnicity groups have a much larger proportion of administratively-certified individuals in campus leadership positions than others. Even when assuming assignment to campus administrative position, certain ethnicities are more likely to be in the head principal position than the assistant principalship. Similar disparities exist across gender boundaries. Experiences of different groups become especially compelling when the various intersections of ethnicity and gender are considered.

Problem Statement

Table 1.1 contains counts of all Texas public school administrators in campus leadership positions during the 2010-11 school year, disaggregated by ethnicity and role (whether an assistant or head principal). Table 1.1 also contains, in the right-hand column, a ratio representing the proportion of individuals within each ethnicity that are assistant principals to the number that are head principals.

Table 1.1 - Asst. prin to Prin ratio by ethnicity

	Asst. prin	Prin	AP to Prin ratio
Black	1515	833	1.82
Latino	2345	1599	1.47
White	5302	5117	1.04

The ratios in table 1.1 illustrate clear boundaries, constructed around ethnicity, in the personnel assignments of Texas public school administrators. Whites are equally likely to be a head principal as they are an assistant principal. No other group even comes close to this ratio. One possible explanation could be that this is just the way things are in Texas; that the ratios are reflective of the career ambitions of the individuals in the data. Alternatively, some might suggest that assignment to

administrative roles is based upon individual merit. Still others might conclude the disparity in ratios is a reflection of large scale social determinants which sort people into and out of certain roles within the education system.

Suppose the assumption is made that the only difference between the individuals represented in table 1.1 is their ethnicity. That is to say, they are all equal in measures of ambition, experience, leadership ability, and any other characteristic that could potentially set candidates apart in terms of fitness. Under this assumption, should one expect similar assistant-principal-to-principal ratios for all ethnicities? Would expecting otherwise equate to recognition of societal prejudice? Questions such as these reside at the core of this study.

The purpose of this study is to explore and interpret the disproportionate assignment of school leaders in Texas. Through a combination of descriptive and inferential techniques, I seek to explore inequalities across ethnicity and gender in the selection and career paths of Texas public school administrators beyond that represented by Table 1.1. I also explore how trends in leadership selection and distribution have changed over time. Finally,

I investigate what factors may explain the disproportionate representation of ethnicity and gender in administrative roles.

Research Questions

The research questions driving the current research study are as follows:

1) *What is the current state of leadership production*[1] *and administrative job availability in the state of Texas and how have they trended over time?* Specifically, how many graduates are coming out of principalship programs each year? How many educators attain administrator certification? How many educators with principal certification procure an administrative position?

2) *How do the career paths of educators with principal certification differ across ethnicity and gender?* Specifically, are there differences across ethnicity and gender in the likelihood of being promoted to a higher level administrative position? Are there differences in the time it takes to procure initial administrative job

[1] The term production is used to describe the amount of educational administration master's graduates coming out of Texas' public institutions of higher education.

placement after certification? In the time it takes to advance to head principal?

3) *What factors affect an administratively-certified educator's probability of being selected into a campus leadership position?*

Significance

The significance of this study is two-fold. First, while the field of educational administration is gaining knowledge about administrators' careers in some states, we have little knowledge of Texas' unique context. Second, there has been limited exploration of the social processes[2], either explicit or hidden, which drive the selection and promotion of school administrators. This study combines the analysis of Texas administrator career-paths with an exploration of the large-scale social determinants which may be at work in the selection and movement of campus leaders. This report not only can inform Texas policy, but may serve as a blueprint for other researchers to explore the production, distribution, and careers of public school administrators.

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[2] Phenomena such as homosociability – the process by which individuals in power replace themselves with candidates that most closely resemble themselves, typically in ethnicity, age, and gender. Homosociability and other social factors are explored in chapter two.

Preview of Literature to be Explored

The literature reviewed in chapter two of this study come comes mainly from the disciplines of educational administration and organizational behavior. Many of the educational administration studies investigate the underrepresentation of females and minority educators in leadership positions (e.g. Joy, 1998). Despite encouraging gains over time in the representation of non-Whites and females in campus leadership positions, these studies reveal a persistent and ongoing overrepresentation of Whites and males in leadership positions (Gates, Ringel, Santibanez, Ross, & Chung, 2003; Lankford, O'Connell, & Wyckoff 2003; Gates et. al., 2004).

The second strand of educational administration literature reviews studies which seek to understand the social factors at play in the disproportional selection of campus leaders. These studies describe a propensity for the majority administrator group, White males, to replace themselves with more White males (Blackmore, Thomson, & Barty, 2006; Tallerico, 2000a). Homosociability and similarity-attraction theory are presented as major influences in the principal selection process. Other studies in this strand reflect the lived experiences of

minority and female administrators as they combat negative valuations of their competency to be campus leaders (e.g. Pollard, 1997).

The organizational behavior literature contains studies which look at the roles ethnicity and gender play in the evaluation and promotion of workers. These studies find that even when controlling for a variety of work-history factors, non-Whites and females are rated lower on annual reviews, and are promoted significantly less than their White and male counterparts (Greenhaus, Parasuraman, & Wormley, 1990; Landau, 1995).

Together, the aforementioned research strands serve as only a preview to the foundation upon which the remainder of this report builds. Many more studies are explored in chapter two. Several findings described in these studies are reflected in the analysis results outlined in chapters four and five of this report. Chapter five includes additional literature references which help to further explain and contextualize the findings of this study.

Method

The analysis in this paper is purely quantitative in nature. The primary data source used in this study is a collection of panel and longitudinal data sets purchased

from the Texas Education Agency (TEA) containing information on the educational background, certification, demographics, and job assignments of all certified educators in Texas employed at any time between the 1991-1992 and 2010-2011 school years. These data were analyzed in combination with publicly-available data reported via Texas' Academic Excellence Indicator System (AEIS), which contains a variety of information about students, faculty, and accountability outcomes for individual campuses in the state.

Because much of the data analyzed in this report is considered to be representative of the full population of interest, as opposed to a sample, a discussion of the appropriate analytical approaches for population and sample data is provided. A rationale for the inclusion of this discussion is included in Chapter 3.

A variety of descriptive and inferential statistics are contained within this report. Survivor estimates are calculated to help illustrate differences in administrator career paths. Multinomial logistic regression is used to explore factors relating to the probability of attaining promotion into campus leadership positions.

Assumptions and Limitations

The primary data source for this study is supposed to contain up-to-date, accurate information on all Texas public educators. The data-collection process employed to compile this data involves many people and is particularly prone to human error. In turn, this means the data is inherently incomplete and inaccurate.

Many of the assumptions and limitations confronting this report are wrapped-up within the quantitative methods I have chosen to employ. Each method has its own assumptions about the underlying data it is describing. Discussion of each method's assumptions is provided in chapter three.

As with any quantitative study, I am limited by my data. In this study I make assumptions about the relative qualifications and leadership abilities of separate administrators in comparison to one another based upon the data I have to describe them. That is to say, I make the assumption that the data available to me is sufficient to evaluate the potential leadership abilities of the research participants and that any remaining variability in leadership ability is randomly and evenly distributed across and within gender and ethnicity groups.

Definitions

An assortment of educational-administration-specific and author-created terms are utilized in this report to describe the roles of educators. The term campus leader is used to describe presently employed assistant principals and principals. Head principal is used to recognize only those who are the head administrator of record for a particular campus. This is not meant to include curriculum leaders or campus-within-a-campus leaders. That being said, the classifications of individual educators in Texas are only as accurate as their role is reported to the state. Interpretations of administrative roles could differ both within and between LEAs.

The term administratively-certified is used to describe educators with valid licensure to work as an assistant or head principal. The required certifications for such licensure have changed over time and the methods I used in this paper account for that. The term educator workforce is used to indicate all individuals with educator certification – this excludes any and all campus and district level staff whose jobs do not require certification by statute (e.g. office and support staff, maintenance, custodial, etc.)

The Texas Education Agency codes each educator's ethnicity into one of twelve categories: African American, American Indian/Alaskan Native, Asian, Black/African American, Hispanic, Hispanic/Latino, Native Hawaiian/Pacific Islander, Native American, Not Specified, Other, Two or more races, or White. For this paper, I have chosen to collapse these twelve categories into five: White, Black, Latino, Asian, and Other. There are a variety of reasons I have chosen to do this – some methodological, some due to convention. Seven of the original twelve categorizations account for less than 1% of all participants in the study. Calculating separate parameters for groups of such small size would not lend itself to robust findings. Of the other five groups, Black/African American, African American, Hispanic, and Hispanic/Latino, and White, I chose to do some combining. All Black/African American and African American educators were recoded into a single group (Black). I have chosen to use Black in my discussion and analysis, instead of African American because it can account for individuals who may identify as Black but not as African American (e.g. Africans, Caribbean Americans, etc.). All Hispanic and Hispanic/Latino participants were recoded into a single group (Latino).

Whites and Asians were left as already categorized in the data. The remaining categories were combined into Other.

I recognize there is no collection of ethnicity and gender categorizations that would satisfy the variety of manners in which all study participants would self-identify. I also recognize the contention that classifying individuals based on their ethnicity and gender only serves to further entrench these differences in our collective conscious. I rebuke this contention and believe the five ethnicity groups I have created for this study remain useful. It is my hope that gender and ethnicity categorizations as constructed in this study will serve as "entry points" for the creation of critical spaces in which to discuss our state's public education system (Calás, Smircich, Tienari, & Ellehave, 2010, p. 247). The ethnicity and gender indicators I rely upon for this study, while not exhaustive of the numerable intersectionalities lived by Texas educators, still serve an important role in understanding trends in the diversity of our public school personnel.

Organization of the Proposal

Immediately following this introductory portion of the paper is chapter two: Review of Literature. It contains a

review and analysis of the research fields this paper seeks to advance. Specifically, I review relevant, large-scale studies of leadership distribution trends as well as related studies exploring public school administrator career paths. I follow this with a review of educational administration research about the selection of administrators and the social factors which drive their appointment and promotion. The chapter concludes with a review of organizational behavior literature.

Chapter three begins with a restatement of the motivating problem behind this study. I then provide a rationale for a quantitative approach in answering my research questions. The remainder of chapter three focuses on the data utilized in this study, the analytical methods I have chosen to employ, and the assumptions and limitations of said methods.

Chapter four contains the results of the quantitative analyses outlined in chapter three. When appropriate, summary tables are provided alongside the written description of each analysis' outcome. Implications are provided for certain outcomes of interests, along with tie-backs to the literature explored in chapter two.

Chapter five is a summary of the first four chapters of the study. It is in that chapter that I reset the study as a whole, provide analysis of the findings in chapter four, explore implications of the study's outcomes, and posit future directions for research.

Summary

This paper provides a highly-detailed quantitative analysis of the production and selection of Texas public school administrators. This study explores the current state of leadership production in the state of Texas and how that production has trended over time. This study also describes how the career paths of Texas public school administrators differ across ethnicity and gender. Finally, I investigate what factors may be at play in the disproportionate selection campus leaders.

Chapter Two: Review of Literature

This study seeks to evaluate the current and historical trends in administrator production and selection in the Texas public education system. Additionally, this study aims to understand what differences, if any, exist in the career paths of administrators of different genders and ethnic backgrounds. In order to provide some background and context to the analysis of this paper, I have chosen to divide this literature review into three sections: 1) studies that have explored underrepresentation and selection into campus administrative positions, 2) work which has sought to explain the social factors guiding these phenomena, and 3) studies from the discipline of Organizational Behavior.

Underrepresentation Studies

Joy (1998) conducted one of the first, comprehensive, nation-wide explorations of underrepresentation in school administration. Her study used the Schools and Staffing Survey (SASS) from the 1987-88 school year and its 1988-89 follow-up report. Joy compiled descriptive statistics and created a variety of inferential models to determine the relative probability of teachers seeking administrative

positions in a single school year, to secure a campus leadership position in the next. Joy illustrated the underrepresentation of women in the public school principalship by explaining that while 86% of elementary teachers were female, they comprised only 22% of elementary administrators. At the secondary level, 51% of teachers were female yet held only 25% of the principal positions. Using the attainment of an educational administration master's degree as a proxy for one's desire to enter the principalship as well as a variety of other individual characteristics, Joy tested whether women's underrepresentation in school administration was discriminatory. She based her discriminatory judgment on the nature of control variables entered into her models – suggesting that all candidates were matched on relative job fit. Joy found that in all of the computed models, being male provided a distinct, significant advantage in probability to procure an administrative position. For the time covered in her study, the likelihood of male promotion ranged from 3.7 to 9.3 times greater than that of females.

A close review of Joy's work reveals limitations in her findings. First, attainment of an educational administration master's degree may not be the best proxy

for desire to enter campus leadership. In many cases, educators attain graduate degrees with no intention of leaving the classroom, but rather to secure an increase in pay. Joy used data covering a period of just two years from a nationwide sample in which just 90 individuals comprised the group of teachers promoted into campus administrative positions. Joy's work also was published nearly 10 years after the data she analyzed was originally collected.

A widely cited study using the same SASS data as Joy was authored by Riehl & Byrd (1997). I have elected not to include any interpretation of their findings because I deem their methodology unsound, but because of the article's prevalence[3], it should not go unmentioned.

Beginning in 2003, a series of studies were funded in partnership between the RAND Corporation and the Wallace Foundation. The first of these to be published was authored by Gates, Ringel, Santibanez, Ross, and Chung (2003). The report found an upward trend in the percentage of females becoming administrators between the 1987-1988 and 1999-2000

[3] The authors used logistic regression to determine the effects of various individual characteristics (experience, education, family structure, campus characteristics, etc.) upon a teacher's probability to enter an administrative position. Some of these individual characteristics were inappropriately conceived proxies built from variables in the original SASS. The authors also chose to exclude a combined model for men and women, thus quashing their opportunity to report and interpret any main or interaction effects a gender variable may have had. In all models, they found that probabilities for administrative job procurements amongst females were far lower than for males. According to Google Scholar, the article has been cited over 50 times since its publication.

school years. Despite this trend, females accounted for just 44% of public school administrative positions despite being 75% of the teaching force in 2000. The authors also found that during the same school year, members of a racial minority comprised only 11% of public school administrators despite the much larger and growing share of the national educator body being members of non-White ethnicity groups.

The second report of the RAND and Wallace collaboration was authored by Lankford, O'Connell, and Wyckoff (2003) and represented a synthesis of four reports on the public school administrator landscape in the state of New York. Using state-wide, comprehensive, longitudinal data similar to that of the present study, Lankford, O'Connel, and Wyckoff analyzed the career paths of some 700,000 teachers and administrators. Despite their assertion of "no evidence suggesting that females are less qualified than males to be teachers or school leaders", the authors found that once certified as an administrator, women were less likely to secure assistant principal positions (p. A-6). The report provides evidence not only of gender disproportionality in New York's administrative ranks, but perhaps even prejudicial selection of principals. Potential explanations for this gender

disparity come from an additional finding that 74% of administratively-certified men apply for campus leadership positions compared to just 64% of women. This difference in application rates could be a signal of lower administrative ambition amongst women. Men were also more likely to report being interviewed for an opening than are women, 13% and 7% respectively, however the relationship between this figure and job applications rates were not discussed in the report.

The third RAND and Wallace report was authored by Gates et. al. (2004) and performed a somewhat similar analysis on North Carolina data as Lankford, O'Connell, and Wyckoff (2003) did with New York State. Aside from analyzing school leadership in different states, the biggest difference in these reports is that Gates et. al. had a specific interest in diversity and equity within the administrative workforce. The authors found an increasing proportion of females securing administrative positions over the years leading up to their study's publication. Despite this encouraging finding the authors described the gender gap as "alive and well" explaining that "men were four times more likely than women to become principals … and over three times more likely to become assistant

principals" (p. x-xv). Although the authors posited the cause for this discrepancy could stem from gender-based discrimination, they did not explore the subject at length. The authors also described an increase in the percentage of principals from an ethnic or racial minority, yet expressed concern the state may not be able to sustain the increase because of higher turnover rates for African-American educators than non-African-Americans in the leadership pipeline.

The final report to come from the RAND/Wallace collaboration was a profile of Illinois administrators authored by Ringel, Gates, Chung, Brown and Ghosh-Dastidar (2004) - a companion report to the Gates et. al. 2004 piece. The authors found that while the percentage of female and non-White administrators had increased over time, White educators remained overrepresented in campus leadership. Similar to North Carolina, the authors suggested that Illinois may struggle to maintain increasing number of minority principals; mainly because the population of Illinois teachers is slowly becoming less diverse and therefore narrowing the diversity of the administrator pipeline. Finally, unlike North Carolina, the

authors found race to have only a small relation with turnover rates for principals in Illinois.

Potential Causes

Educational administration remains a male-dominated field, particularly in the secondary principalship and the superintendency (Gates et al., 2003; Tallerico, 2000a, 2000b; Young & McLeod, 2001). Given the previously described trend of the disproportional distribution of women and ethnic groups in administrative positions, it would be wise to explore potential causes. A review of the literature provides two main streams of explanation, 1) differences between male and female educators, and 2) social factors involved in the selection process. These streams are explored below.

Differences between male and female educators.

Joy (1998) offered three alternative explanations for the male-favoring, prejudicial promotion of teachers into administrative positions which she described in her analysis of SASS data[4]. These explanations are be used as a

[4] These three explanations are the basis of this subsection because no other papers suggested inherent differences between male and female educators other than gender.

starting point for exploring potential causes of disproportionality.

Joy first hypothesized that female educators may view administration as a "man's game" and therefore curb their own ambition to enter leadership positions. In her quantitative analysis, Joy was unable to measure gender differences in ambition, but estimated "the likelihood that women with educational administration degrees are less likely than men with these degrees to desire promotions is small" (p. 201).

A qualitative study was performed by Young and McLeod (2001) which offers more perspective on the matter. The authors reviewed records of 127 female students affiliated with a single educational administration department of an Iowa university. From that group, 20 women were selected whom represented a variety of roles in the education system from elementary administration to the superintendency[5]. In their study, Young & McLeod defined career aspirations for female educators as "…a complex concept that involved

[5] While this study does not consider superintendents and central office personnel, the individuals who occupy these positions within a district typically fall under the umbrella of educational administration and have similar educational and work backgrounds as do campus leaders. Therefore, this study and other which discuss the superintendency remain relevant to the literature review.

career commitments, positional goals, and leadership orientations" (p. 469). They determined that a woman's likelihood to pursue and enter administration was heavily dependent on three factors: type(s) of administrative role models, proximity to transformative leaders, and the support and encouragement they receive from their superiors. While promotion from a place of isolation was not deemed impossible, it was ideal levels of the three, aforementioned factors that steered most of Young & McLeod's participants into administration.

Joy's (1998) second non-discriminatory alternative explanation conjectured that women may not apply for campus leadership openings as often as men. Potential explanations for this discrepancy included responsibilities stemming from family responsibilities (i.e. having young children at home). Eckman (2004) also explored the role of family structure in the high school principalship and found that only 24% of female principals had children at home, concluding that "…either women with children at home are not applying for the high school principalship or they are not being hired" (p. 382). As mentioned in the discussion Lankford, O'Connell, and Wyckoff (2003) study on New York State, administratively-certified women's lower likelihood

to have reported applying for a campus leadership position may be a signal of lower ambition for an administrative career. These findings suggest that responsibilities such as child-rearing could be influencing both the rate at which women apply for administrative jobs, and the rate at which they are selected.

The final factor suggested by Joy (1998) is that men may simply make for better administrators. She suggests that males could be more productive administrators for a variety of social reasons, not the least of which being that students, teachers and the school board may be more respectful of their authority because they are men rather than a valuation of their training and qualifications (p. 201). This sentiment that men garner more respect and authority based simply on their gender plays into the entrenchment of ill-conceived social norms which favor men over women as school leaders. Further exploration of this and other social factors is offered in the following section.

Social factors involved in the selection process.

Pollard (1997) conducted a qualitative study with 20 Black urban elementary school principals as participants. 12 of the participants were female. The study asked these

school leaders to reflect on their past and present careers as school leaders and the challenges they have had to face, based upon their race. Pollard revealed that all of the study's participants felt they had to actively counteract notions of incompetency based simply upon their race. The participants felt their abilities and gifts were undervalued, underrated, and under-appreciated by parents, faculty, and central office. Should teachers and central office administrators question or even challenge the authority and competency of Black administrative candidates, it would not be unreasonable to expect lower levels of promotion and higher levels of turnover for Black school leaders. This would in turn lead to underrepresentation of Black educators in school leadership positions.

Female educators from a racial minority.

To this point in the literature review, the experiences of administrators from ethnic and minority backgrounds has not been discussed in detail. Nor have the experiences of administrators whom are both female and belong to an ethnic or racial minority. Consider the following quote:

> Almost anyone who remembers "school days" has two images of school officials. The favorite teacher, in fact nearly every teacher, was probably a woman. But the feared and revered final authority, the principal, especially in high school, is likely to have been a man. When the memory then turns to the race of the principal, the pattern of the White, male school administrator begins to emerge. (Coursen, 1975, p. 1)

This very common recollection of one's own school days fuels the exclusion of race, gender, and other socially-constructed characteristics from the educational administration discourse.

In the same Pollard (1997) article mentioned earlier, one of the study participants who had been a principal for two years discussed how being an African American female affected her job. She described that some of her staff did not respect her authority because she was Black. On top of that, she said the following of her staff "[they] definitely don't want to take orders from anybody Black *and* female" (p. 361). This is particularly troubling in light of the gifts that other study participants felt they brought to the table as campus leaders. For example, two of

the respondents felt that their leadership of a majority White faculty allowed them to bring a deeper knowledge about interacting with the majority African American student population. When non-White leaders are filtered out of schools with non-White student populations, districts risk keeping advantageous perspectives and skill sets from benefitting the children who need them the most.

Fitzgerald (2003) explains the error in lumping together the experiences of women from different ethnic backgrounds and assuming they have a singular, shared experience. She states that "women from ethnic groups other than White are a minority in a minority setting" (p. 433). Because of this, feminist educational administration research often fails to distinguish *women* from *White women* making Whiteness a taken for granted norm (p. 433). In other words, the varying intersections of race with the female gender are often ignored in the research of our field. This results in the experiences of White female educators who have their own race-based privilege being conflated with the experiences of individuals at other intersections of ethnicity and femaleness. Fitzgerald suggests that:

> Knowledge production for and about educational leadership needs to be dismantled to provide a standpoint from which to theorize and research the realities of leadership through the experiences of women from a variety of ethnicities that simultaneously encourages and permits the situating of such knowledge and action in the cultural spaces in which they arose … this includes acknowledging and interrogating Whiteness as a specific privilege and taken-for-granted construct (pp. 441-442).

Dillard (2010) shares Fitzgerald's sentiment in her exploration of the intersectionality of race and gender experienced by African American females in the field of education. Dillard makes the case that traditional powers imbalances have curbed the legitimacy and prevented the emergence of research on the experiences and identify of African American, female educators. Dillard calls for the establishment of an "endarkened epistemology" as a means to shed the exclusory forces that surround research on the experiences and contributions of women of color in education. She uses the term endarkened (an allusion to skin color) to refer to the explicit recognition and consideration of race in the interpretation and construction of research. An endarkened epistemological approach can inform our collective understanding of the careers of minority female administrators.

Further still, there is error in assuming female leaders have a shared, singular experience even within a particular ethnicity. Reed and Evans (2008) performed a detailed qualitative analysis of the experiences, leadership practice, and beliefs of African-American, female administrators in a predominately-Black, urban school. Their study began with a review of two major assumptions common in educational administration literature: one, that African American principals "tend to identify/empathize with African American students", and two, that African American female principals are nurturing leaders, caregivers or 'othermothers' (p. 490). In their case study, Reed and Evans found that neither of these assumptions held for one particular participant. The principal not only had an antagonistic relationship with her students, but carried a deficit view of the African American community surrounding the school.

Homosociability and gatekeeping.

Blackmore, Thomson, and Barty (2006) apply the concept of homosociability (1984) to the selection of school leaders. They describe homosociability as the tendency of decision-makers in the administrator selection process to pick candidates like themselves. Given the proclivity for

higher proportions of males to ascend to positions influential in the administrator selection process (Gates et al., 2003; Tallerico, 2000a, 2000b; Young & McLeod, 2001), homosociability has the tendency to create a 'closed circuit' in which men replace men as school leaders (Blackmore, Thomson, & Barty, 2006, p. 312). These closed circuits work to exclude females and educators of color.

Homosociability was likely a factor driving the construction of a purported state-wide administrator shortage and subsequent policy creation intently critiqued by Young (2003). In her review of publications from state task forces (primarily comprised of White men) on the shortage of school administrators combined with the data from a previous study, Young was able to clearly illustrate the gendered construction of the 'shortage crisis' confronting the state. Even when confronted directly with the notion, little credence was afforded from the task forces to the role and experiences facing females in the state's administrative pipeline, much less their collective potential as a solution to the 'crisis'.

Tallerico (2000a) conducted a thorough examination of the superintendent search and selection process providing many findings relevant to the current research project.

Tallerico interviewed 75 individuals including educators seeking superintendency positions, members of superintendent selection committees, headhunters, and school board members from across the state of New York – all with the intention of understanding what individuals from these different groups "do to both help and hinder diversity in candidate pools and the superintendency" (p. 29). Tallerico employed gatekeeping theory which states that individuals seeking promotion into leadership positions must pass through a series of 'gates' which can be thought of as decision points in a process where candidates are either rejected or move toward the next gate. Gates are not confined to the individual level; they exist at the institutional level where rules and norms determine the progress of potential candidates. While she doesn't use the term, homosociability plays a powerful role in gatekeeping. Quality candidates were deemed as those with prior experience at secondary campuses and in district leadership. Tallerico (2000a) explains that such a construction of quality disadvantages women and people of color, as such positions are traditionally held by White males.

Participants in Tallerico's (2000a) study agreed that the face-to-face interview portion of the selection process was the most influential factor in the hiring process. Candidates, headhunters, and board members alike cited the importance of positive chemistry and a good "gut feeling" coming from interviews as very influential in final decision-making. Tallerico suggests that the "hypervaluing of 'how we connected with the candidate' and 'who we could relate to best' is more likely to disadvantage people of color and females than White male applicants" (p. 36). One reason she cites is because so many of the gatekeepers in the selection process are White men. The other reason is similarity-attraction theory, a concept very similar to homosociability, in which feelings of interpersonal-connection between candidates and interviewers can create subconscious preferences amongst gatekeepers to bring aboard individuals like themselves. When the gatekeepers are themselves primarily White men and employ narrow definitions of quality candidates, closed-circuits emerge and a protected network of similar leaders continues forward.

In summary, the experiences, beliefs, and attributes, of female educators as well as the expectations placed upon

them, differ not just from men, but also differ between and amongst the various ethnicity groups these women come from. Despite these differences, gatekeepers rely heavily on preconceived notions and stereotypical expectations of the ability for administrative candidates to lead based upon what they see on the outside. These notions and expectations fuel the disproportionate selection and promotion of females and minorities in school administration, ignoring the unique perspectives and abilities that individuals from diverse backgrounds bring to the table.

Organizational Studies

Greenhaus, Parasuraman, and Wormley (1990) performed a study on three large organizations from the banking, communications, and electronics industries. The authors constructed two matched groups of Black and White managers within these organizations totaling 1,628 individuals in managerial positions. These individuals and their supervisors were administered surveys to collect a variety of responses about the workplace. Examples of responses included job satisfaction and acceptance in the workplace for the managers, while their supervisors were asked to assess the performance and promotability of the managers.

The authors found that Black managers, even when controlling for age, organizational tenure, job function, and level within the organization were systematically more likely to hit a career plateau – seven years or longer in the same position. The authors also found that Black managers were systematically rated lower by their supervisors than were their matched, White counterparts. The authors were hesitant to claim bias as the main cause behind their findings, but suggested it as a possible reason for the discrepancies between Blacks and Whites in the survey results. This study did not look at the relationship gender played in the survey responses.

Landau (1995) conducted a similar study, but with 1,268 participants from a single Fortune 500 company. Landau analyzed survey responses from the participants and reviewed personnel records from the organization. The personnel records contained yearly performance appraisals which rated the study participants between low, average, and high potential for promotion in the company. Controlling for age, education, organizational tenure, salary grade, role, and even participant-rated satisfaction with the support they receive in their career, regression models found that females and non-Whites consistently and

significantly rated lower for promotional potential. Unlike the Greenhaus piece, this study did look at interactions of race and gender, but found no significant relationships.

Similar findings emerged from a 2012 meta-analysis of promotion potential studies, conducted by Roth, Purvis, & Bobko. The authors found that women, even when rated *higher* in job performance than their male counterparts, were given lower promotability ratings. When considered together, these studies illustrate that even when the relative merits of candidates for promotion within an organization are considered, difference between individuals defined by their ethnicity and gender still play a role in their upward mobility. These studies suggest that gender and ethnicity-based biases play a significant, damaging role in the selection and career paths of non-White and female workers.

Summary of Sources

The literature reviewed in this chapter covers three main areas; 1) studies highlighting the disproportional selection of Whites and males into administrative positions at both the state and national level, 2) studies exploring the social factors at play in the underrepresentation of minorities and women in campus leadership positions, and 3) discussion from the field of Organizational Behavior. These

sources have shown positive trends highlighted by the increased presence of minorities and women in leadership roles, but also illustrated the ever-present dominance of Whites and males as school leaders.

A variety of explanations for prejudicial selection of administrators was offered. These explanations included a gatekeeping process heavily influenced by homosociability and selectivity-attraction theory. They also included evidence for gender and ethnicity-based bias in the evaluation of individuals within organizations. These theories should not be considered in isolation, nor should they be considered as evidence of simple prejudice. They should instead be considered collectively as examples of the societal ills which combine to form the exclusionary forces of sexism and racism which pervade our education system. These forces are exemplified in the systematic processes by which non-Whites and females continue to be filtered out of school leadership positions.

Chapter Three: Methodology

This research project has three main goals: 1) to describe the past and present production of school leaders in Texas, 2) to understand how the careers of administratively-certified educators differ for individuals of differing ethnicity and gender, and 3) to investigate factors contributing to the disproportional assignment of school leaders based on ethnicity and gender. This chapter begins with a rationale for using quantitative methods to answer my research questions. The remaining sections are dedicated to describing the data used in this study, the methods I have chosen to analyze the data, and a discussion of the assumptions and limitations of those methods.

Need for Quantitative Study

The research questions of this study, particularly those interested in how leadership preparation and placement has trended over time, lend themselves to quantitative exploration. Descriptive statistics, summary tables, and a handful of statistical models provide a detailed explication of Texas' unique leadership landscape and the changes it has undergone over the past twenty years. The last research question which centers on factors

affecting selection practices, could certainly benefit from supplemental qualitative data, however the richness of the data set utilized for the present study allows me to compile enough unique characteristics for each administratively-certified educator that I can make conclusions about factors contributing to the probability of being promoted into campus leadership.

Sources of Data

This study uses a multitude of databases compiled by the Texas Education Agency (TEA). Some of the data was purchased from TEA and is managed by the University of Texas at Austin's Principalship Program (UTAPP) for whom, at the time of the study, I am a research assistant. Other data come from Texas' publicly available Academic Excellence Indicator System (AEIS), which annually releases comprehensive staff, student, and accountability data aggregated at the campus level.

The purchased data contains information compiled by the State Board for Educator Certification (SBEC), a division of TEA which manages the certification information on all public school educators. The certification information lists the effective and expiration dates for each certification gained over an educator's career, as

well as the specific subject area and grade levels in which they are certified. The purchased data also contains specific information on the job assignment(s) of all employed educators for each school year between 1991-1992 and 2010-2011. The job assignment information lists each individual's role[6](s) as well as the name of the campus, district, and region[7] in which they work. The final portion of the purchased data contains demographic information on each of the participants in the study. This data tells indicates individuals' birth date, ethnicity, and gender.

Site

All data analysis took place within the state of Texas – primarily on campus at the University of Texas at Austin.

Participants

The participants in this study include all certified educators employed in the public school system at any point between the 1991-1992 and 2010-2011 school years (N=985,232). Of these individuals, nearly all analysis is performed upon those, who at any time were administratively-certified (93,424). To provide an idea of

[6] e.g. classroom teacher, assistant principal, principal, etc.
[7] All school districts belong to one of 20 regional education service centers (ESC) constructed by TEA. Figure A.1 of the appendix contains a map displaying the boundaries of each ESC.

how these 93,424 educators were dispersed over the twenty years of the study, the total number of them employed as campus administrators in any given school year ranges from a minimum of 10,165 to a maximum of 17,591.

Individuals included in this study were passive participants. No educators were contacted for any additional data collection. All the data used for this study comes from the existing data sets purchased from TEA and obtained through AEIS.

Analyzing the Data

The data from SBEC is in person-period format. This means there are multiple "rows" for individual educators. These separate rows contain data about a unique certification occasion. These occasions can mark an educator's initial entry into the SBEC system, they may be reflective of an educator adding a new certification area to their license, or could even be a renewal of an existing certificate.

The TEA data containing responsibility and assignment information for all educators is split across 20 different files. Each file marks the campus and role information each individual educator was assigned to during a particular school year. Because the files represent a single, uniform

period in time for all individuals described within, they are considered panel data. Many educators have multiple rows in the data set to account for differing grade level and subject assignments. Some educators even have multiple campus assignments.

One of the major tasks in the data analysis portion of this study has been the clean-up, sorting, and recombination of the disparate licensure, assignment, and demographic files. Thankfully, the state uses unique identifiers for all educators and campuses in the system. This allowed me to identify schools and individuals across multiple data sources. Below is a listing of the variables used in this study, how they are measured, and how they were used (i.e. as dependent compared to independent variables).

Table 3.1 – Study Variables

Variable	**Nature of Measure**	**Use**
Ethnicity	Categorical	Independent
Gender	Categorical	Independent
Age	Continuous	Independent
Region	Categorical	Independent
Role	Categorical	Dependent
Time[8]	Continuous	Independent
Experience in education	Continuous	Independent
Tenure with district	Continuous	Independent
School characteristics[9]	Primarily continuous	Independent

[8] A more thorough description of the use of time in this study is offered in table 3.2

Descriptive Statistics

The population of interest for this study is all administratively-certified educators who have worked in Texas public schools over the past twenty years. The data used for this study covers that entire population. Because I have population level data at my disposal, there is no reason for me to exclusively generate inferential statistics. Descriptive statistics and simple mathematical procedures allow for the calculation of the actual population parameters in many cases. Estimating real population parameters with population data (N as opposed to n) precludes reliance upon the determination of significance (p values) in statistical findings that is so prevalent in modern research.

Below is a listing of the measures to be explored, the descriptive methods to be employed, the variables involved, and the research question they address:

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[9] e.g. percentage of students economically disadvantaged, type of school (elementary, middle, high, other), AEIS accountability rating, etc. Most of these variables are percentages describing students characteristics and are therefore continuous. Others such as school type and accountability are categorical.

Table 3.2 – Descriptive Methodology

Outcome of Interest	Output / Method	Variables considered	Research question addressed
Descriptions of all subjects across ethnicity and gender	Tabulations, percentages	All	N/A
Production of educational administration master's degrees	Raw counts, percentages, ratios, graphs	ethnicity, gender	1
Production of first time administrator certificates [*19 - one for each year between 1992 and 2010]10	Raw counts, percentages, ratios, graphs	ethnicity, gender	1
Assignment of first time administrators (1st AP or prin job) [*20 - one for each year in data]	Raw counts, percentages, ratios, graphs	ethnicity, gender	1, 2
Educator role by ethnicity (teacher, ap, or prin) [*20 - one for each year in data]	Tabulations (raw count & percentage), graphs	ethnicity, gender	1, 2
Educator role within ethnicity (teacher, ap, or prin) (teacher, ap, or prin) [*20 - one for each year in data]	Tabulations (raw count & percentage), graphs	ethnicity, gender	1, 2
Time 1 - Tenure in education system	Mean	ethnicity, gender	1, 2
Time 2 – time between system entry and administrative certification	Mean	ethnicity, gender	1, 2
Time 3 – time between administrative certification and initial administrative placement	Mean	ethnicity, gender	1, 2
Time 4 – time between first assistant principalship to head principalship	Mean	ethnicity, gender	1, 2
Time 5 – time between administrative certification and head principalship	Mean	ethnicity, gender	1, 2

[10] For all outcomes measured separately for each of the twenty years of data, a variety of visual aids are constructed to show how trends have changed over time.

Time 6 – time between system entry and any administrative placement	Mean	ethnicity, gender	1, 2
Time 7 – time between system entry and head principal placement	Mean	ethnicity, gender	1, 2

Survival Estimates and Probabilities

In only a few instances do I employ quantitative methodology that departs from frequencies, tabulations, means, and other related descriptive methods. These instances are the calculation of a) relative hazard ratios between groups of individuals, and b) relative probabilities between individuals in the data set.

Event history analysis is a collection of methods used to understand whether and when events occur over a given period of time, with particular interest paid to changes in status (e.g. an individual being hired into a campus leadership position). In this study, event history analysis provides another layer of understanding to the differences in career paths experience by members of differing gender and ethnicity groups.

The specific method to be employed is the estimation of Kaplan-Meier survivor functions. Conducting these analyses requires the construction of time sensitive data sets containing measures of time passage between certain

major events in educators' careers. The outputs of these models allow us to understand changes in the average risk faced by the various intersectionalities of ethnicity and gender for experiencing the event of interest – in this case, procuring a campus leadership position. In other words, we can understand the differing rates at which administratively-certified educators exit the classroom and enter campus administration, as well as how those rates change over time and how they differ across ethnicity, gender, and their various intersections. A detailed explanation of survival estimates is offered in chapter four.

Relative probabilities were constructed to determine how an individual's characteristics (specifically: ethnicity, gender, ethnicity*gender, a variety of characteristics describing the campus in which they are employed, age, experience, tenure, role, region of state) affects their probability to remain a teacher, become an assistant principal, or become a head principal. These three outcomes are nominal in nature; therefore a multinomial logistic regression is ideal way to calculate these relative probabilities.

The characteristics listed above as covariates for the multinomial logistic regression models were chosen to provide rich detail about the work history and work environment from which the administrative candidates in this study come from. The intent is to control for the effects that a leadership candidate's individual characteristics, work history, and work environment might have upon their probability of being selected into an administrative position. Interpreting the effects of these variables in the model outputs gives us an estimation of how much a particular covariate (e.g. ethnicity) has upon one's probability of being hired as a campus leader, when holding constant the effect of a variety of other covariates (e.g. tenure with current district, previous year campus accountability rating, percentage of students on the campus that are economically disadvantaged, region of the state, etc.).

Multinomial logistic regression fixes the independent variable coefficients of the baseline outcome, in this case being a teacher, to 0. Model results allow the researcher to view the independent variable coefficients of the other outcomes (becoming an AP or becoming a principal) as changes in odds in relation to the base outcome.

Multinomial logistic regression assumes the independence of irrelevant alternatives (IIA). This assumption states that a model is not excluding additional alternative outcomes that would significantly change its output. McFadden and Train (1977) explain that incorrectly assuming IIA in a multinomial logistic regression will lead to inaccurate probabilities being reported. In the same article, the authors offer strategies for testing the presence of IIA. This study employs the commonly utilized Hausman and Small-Hsiao tests of the IIA assumption. Finally, consideration of variable homoscedasticity is not needed in multinomial logistic regression. This is because the identification technique of the model fixes residual variance to a generalized extreme value distribution.

As mentioned previously, the multinomial logistic regression models measure the effect of a variety of independent variables on an administratively-certified individual's role assignment. In order to determine whether or not certain independent variables "matter", p values are interpreted as a measure of statistical significance. Even though this study utilizes population level data, interpretation of these values is a necessity to determine the relative effects of said independent variables.

Covariates with p values of less than 0.05 are considered statistically significant.

Below is a listing of the probability and hazard models used in the study, as well as the variables included and the research question they address.

Table 3.3 – Inferential Methodology

Outcome of Interest	Method(s)	Variables considered	Research question addressed
Survival rate of teachers with "failure" defined as procurement of assistant principalship	Kaplan-Meier survivor functions	ethnicity, gender, ethnicity*gender, multiple characteristics of the campus in which they are employed, age, experience, tenure, role, region of state	2
Survival rate of teachers with "failure" defined as procurement of head principalship	Kaplan-Meier survivor functions	ethnicity, gender, ethnicity*gender, multiple characteristics of the campus in which they are employed, age, experience, tenure, role, region of state	2
Relative probability of being a teacher, ap, or principal [*20 - one for each year in data]	Multinomial logistic regression	ethnicity, gender, ethnicity*gender, multiple characteristics of the campus in which they are employed, age, experience, tenure, role, region of state	3

Chapter Summary

In this chapter I have made the case for a primary reliance on descriptive statistics. The data being used for this study is stored in a variety of formats, but all together, they cover the entire population of interest.

Therefore, descriptive statistics create population parameters, rather than estimated statistics. I have also introduced Kaplan-Meier survivor estimates which help illustrate differences in careers paths for individuals at the various intersections of ethnicity and gender. Finally, multinomial logistic regression was described as the method for investigating which factors contribute to an individual's probability to be selected into an administrative position.

Chapter Four: Analysis & Findings

This chapter is separated into two parts. The first is a report of all descriptive statistics outlined in Table 3.2. These descriptives form the responses to research question one, which sought to explore trends in administrator production and selection. The latter half is a report of inferential statistical models, all performed via a frequentist approach. The inferential models form the responses to research questions two and three, which dealt with differences in career paths based on ethnicity and gender, as well as the factors related to underrepresentation. For some models, particularly the multinomial logistic regression models, only representative findings are presented because the full model outputs are far from succinct. Full reports from all models can be found in table A.8 of the Appendix. All data management and statistical analysis for this chapter was performed using Stata statistical analysis software[11].

Descriptive Statistics

As mentioned in Chapter Three, this study utilized 985,232 participants representing any certified Texas

[11] Stata IC ver. 11.2 64 bit

public school educator employed between the 1991-1992 and 2010-2011 school years. The total number of public school educators grew by roughly 12,000 each year from a low of 279,797 in 1991-92 to a high of 461,375 in 2009-10.

Gender representation in the public school workforce was virtually static over the 20 school years covered in the study at an 80%-20% split, females to males. The ethnicity of Texas public school administrators however, changed greatly over the same time frame. With a high of 73.9% of the workforce in the 1991-92 school year, White representation consistently fell each year to a low of 62.1% in 2010-11. Asians have accounted for a low of 0.61% of public school educators (n=1,705) in 1991-92 to a high of 1.19% (n=5,505) in 2010-11. The share of Black public school educators in Texas has risen gradually over the past 20 school years from a low of 8.47% (n=24,708) during the 1992-93 school year to a high of 10.36% (n=47,770) in 2011-12. Latino educators have seen a very substantial and steady increase in their representation over this same time period – from a low of 16.11% (n=45,087) in 1991-92 to a high of 25.05% (n=115,575) in 2010-11. The number of *new*, White educators coming into the workforce each year appears to be leveling off, where all other ethnicity groups are

growing each year. This suggests that White's share of the workforce will decline quite precipitously; especially should the number Latino educators entering the workforce each year stay on its current trajectory. Table A.1 of the appendix contains complete cross-tabulations of the participants' ethnicity and gender for each of the 20 school years covered in the study.

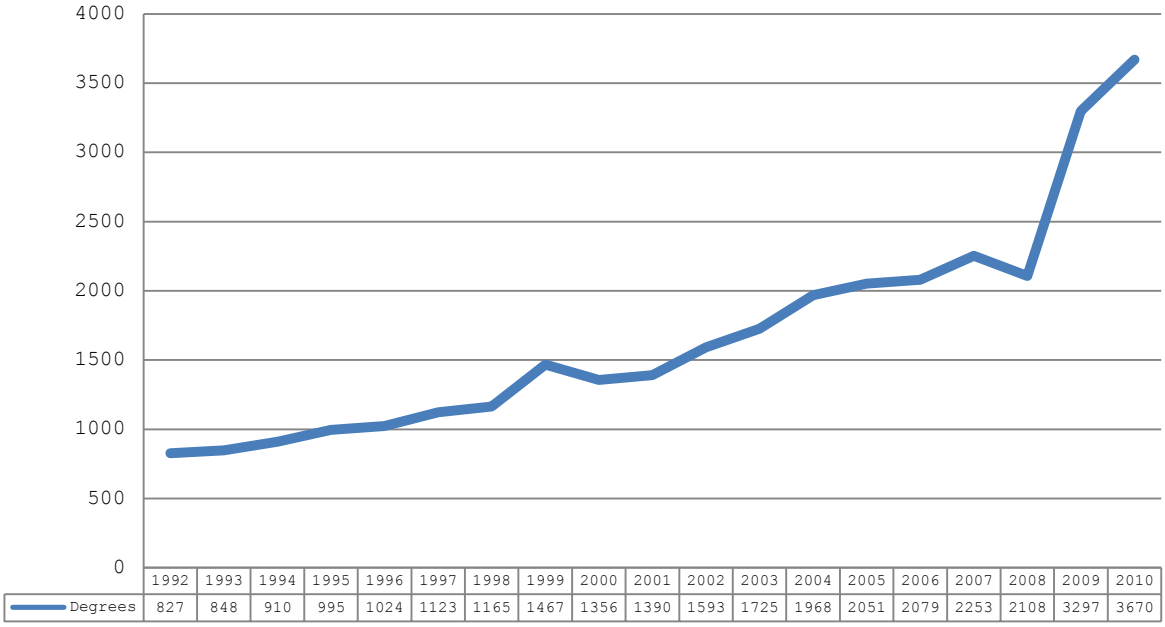
Research question 1.

Shifting the focus from a broad picture of all educators toward campus leaders, recall that the first research questions asked "What is the current state of leadership production in the state of Texas and how has production trended over time?". To answer this question I proposed to quantify, for each of the 20 years in the study, the number of educational administration master's degrees awarded, the number of first time administrator certifications granted, and the number of educators entering campus leadership positions for the first time in their career.

Beginning with degree production, Figure 4.1 shows the number of educational administration master's a degrees awarded each year by public institutions of higher education in the state of Texas. Master's degree production

has seen a steady increase marked by a very sharp jump in recent years.

Figure 4.1 - Educational Administration Degree Production by Public Institutions in Texas

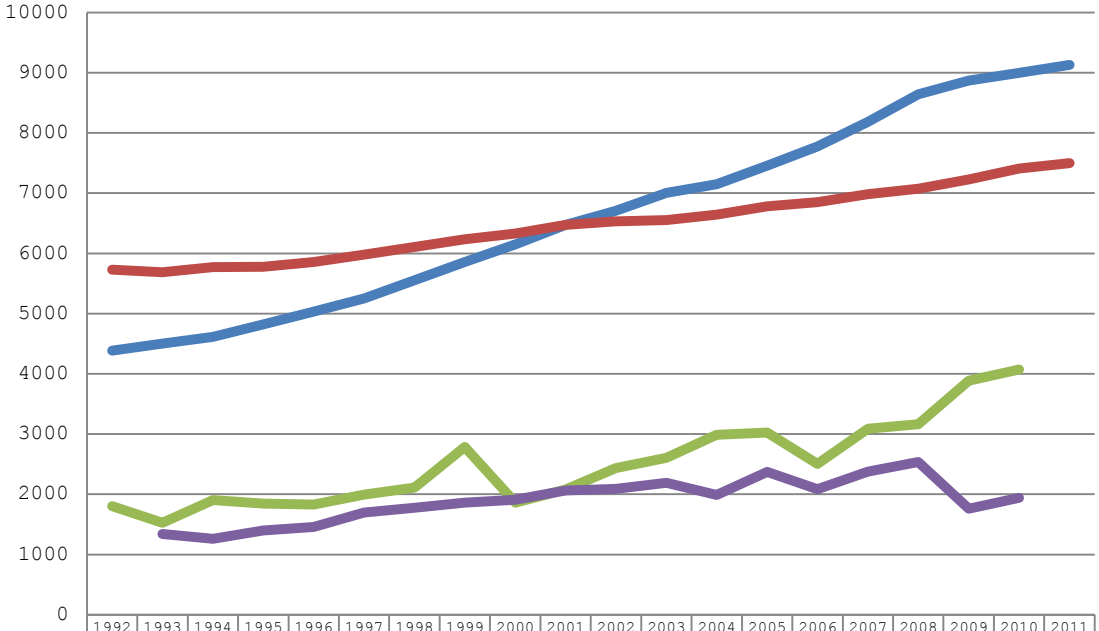


	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Degrees	827	848	910	995	1024	1123	1165	1467	1356	1390	1593	1725	1968	2051	2079	2253	2108	3297	3670

To provide some context to the production of first time certifications and procurement of initial administrative job placement, Figure 4.2 shows these figures along with the total number of campus leaders in the assistant principal and head principal positions across the state. As can be seen below, the number of first time administrative certifications fluctuates annually, but shows an upward trend over time. The same is true for the number of educators procuring first time administrative job placement. Another interesting trend from Figure 4.2 is

seen in 2001. During this year, the total number of assistant and head principalship positions in the state became equal. Since that time, there has been continuous, positive growth in the number of assistant principal positions, while growth in the head principalship has been modest (increases in total head principal positions can only come from new school constructions). This suggests that LEAs are electing to employ more assistant principals on their campuses.

Figure 4.2 – Total Counts of Campus Leadership Positions and First Time Administrative Job Placements



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
asst. prin jobs	4383	4502	4611	4818	5034	5251	5552	5854	6151	6474	6709	7002	7146	7458	7774	8182	8641	8869	8997	9129
head prin jobs	5728	5684	5774	5777	5859	5977	6108	6232	6332	6473	6533	6555	6642	6783	6852	6981	7071	7230	7407	7498
first time certs	1800	1528	1904	1847	1827	1992	2113	2785	1860	2079	2435	2607	2985	3026	2505	3089	3161	3888	4072	
first time admin		1338	1263	1401	1458	1697	1776	1860	1911	2065	2089	2192	1991	2371	2084	2377	2537	1762	1943	

The data in figure 4.2 become especially interesting when the sharp increase in degree production beginning in 2009 (illustrated in Figure 4.1) is contrasted against the very modest growth of first time administrative job procurement over the same time period. This suggests the possibility of a flooded administrator market which will be discussed in chapter five.

Together, Figures 4.1 and 4.2 show that administrator production has increased steadily over the past twenty years with a sharp increase in the awarding of educational administration master's degrees occurring in the 2008-09 school year. The number of educators appointed to campus leadership positions for the first time in their careers has steadily increased over time at a rate very similar to that of first time administration certifications. In 2009, these trends change significantly as the number of first time administrator certifications jumped up 23%, while the number of first time campus leader hires fell 30%. Over the same twenty years, growth in public school leadership positions grew steadily, but not at a rate comparable to the growth in educational administration master's degrees – particularly in the years since 2009. In sum, trends in the growth of educational administration graduates, campus

leadership certifications, and first time campus leadership assignments have been steadily positive, with the exception of 2009 onward. In chapter five, explanations for these changes will be discussed.

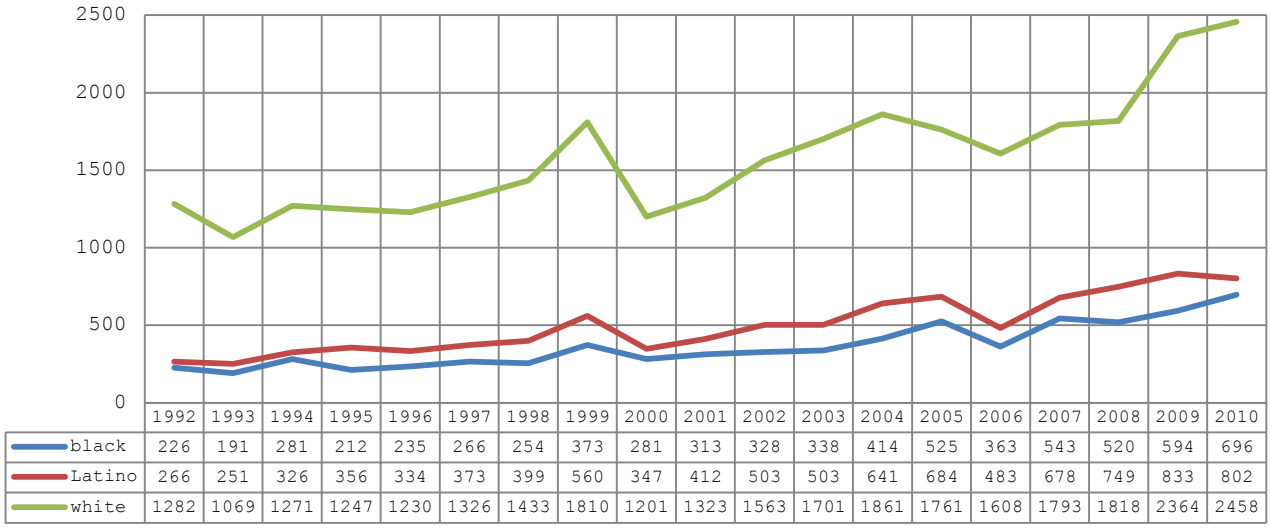
Research question 2.

The second research question asks how the career paths of educators with principal certification differ across ethnicity and gender. I proposed a variety of methods for answering this question, both descriptive and inferential. The first step to answering this research question requires a thorough review of the production and certification of leaders over time and across ethnicity and gender. Subsequent steps included examination of the distribution of individuals across and within campus roles, as well as a comparison of measures of time between significant career changes – all disaggregated by gender and ethnicity.

Production and certification.

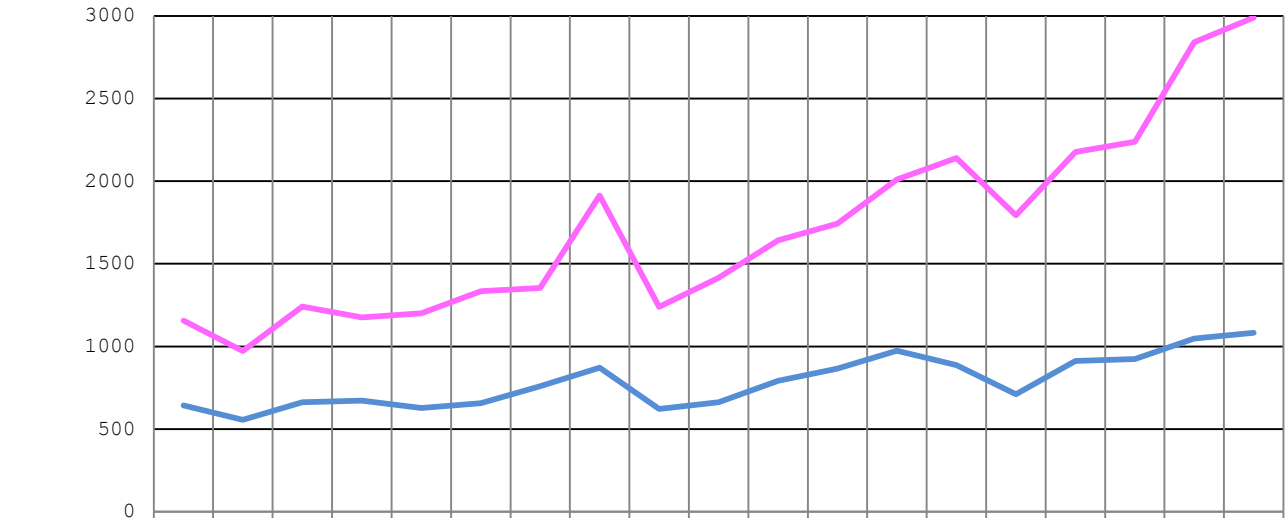
Figures 4.3 and 4.4 display the number of first time administrator certifications issued by the state, disaggregated by ethnicity and gender, respectively. These figures exclude certification renewals. Figures for Asians and others have been excluded from the chart as they are indistinguishable from the chart's baseline of zero.

Figure 4.3 - New Certs by Ethnicity



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
black	226	191	281	212	235	266	254	373	281	313	328	338	414	525	363	543	520	594	696
Latino	266	251	326	356	334	373	399	560	347	412	503	503	641	684	483	678	749	833	802
white	1282	1069	1271	1247	1230	1326	1433	1810	1201	1323	1563	1701	1861	1761	1608	1793	1818	2364	2458

Figure 4.4 - New Certs by Gender



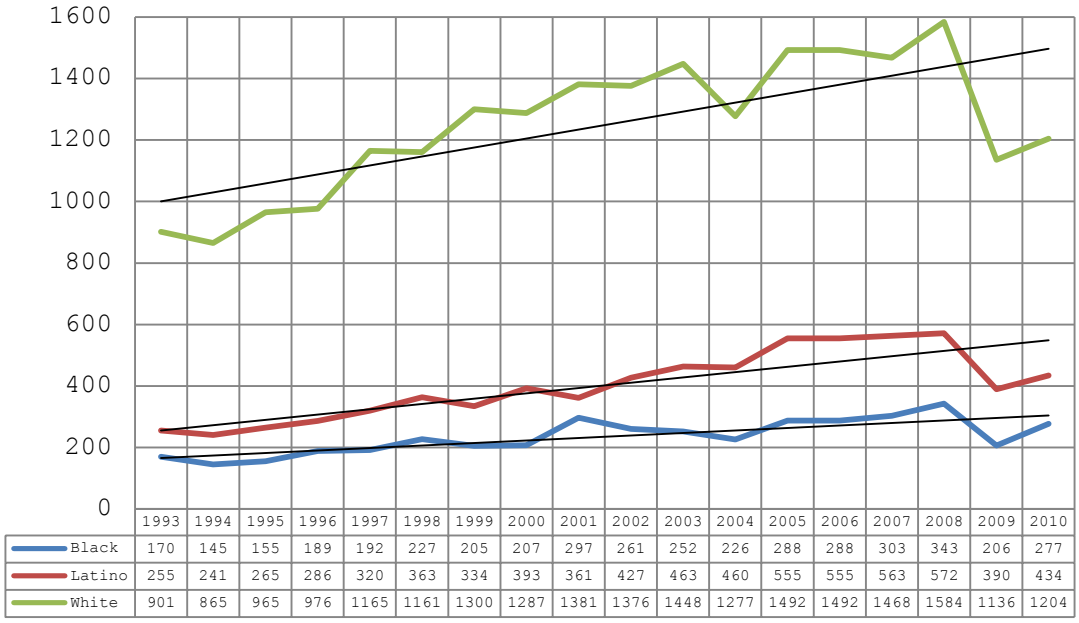
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
females	1157	973	1241	1175	1200	1335	1353	1913	1239	1416	1643	1742	2010	2139	1794	2176	2238	2841	2989
males	643	555	663	672	627	657	760	872	621	663	792	865	975	887	711	913	923	1047	1083

Figure 4.3 shows a steady and comparable rise in first time certifications across gender and over time with the

exception of 2009 and onward. Here we see a steep raise the number of first time principal certifications being procured by White educators. Figure 4.4 displays a widening gap over time in which women earn an increasingly larger share of first time administrative certifications. Similar to figure 4.4, there is a large upward bump in certifications beginning in 2009. This suggests that an unusually large amount of White women are securing administrative certification beginning in 2009 and moving onward.

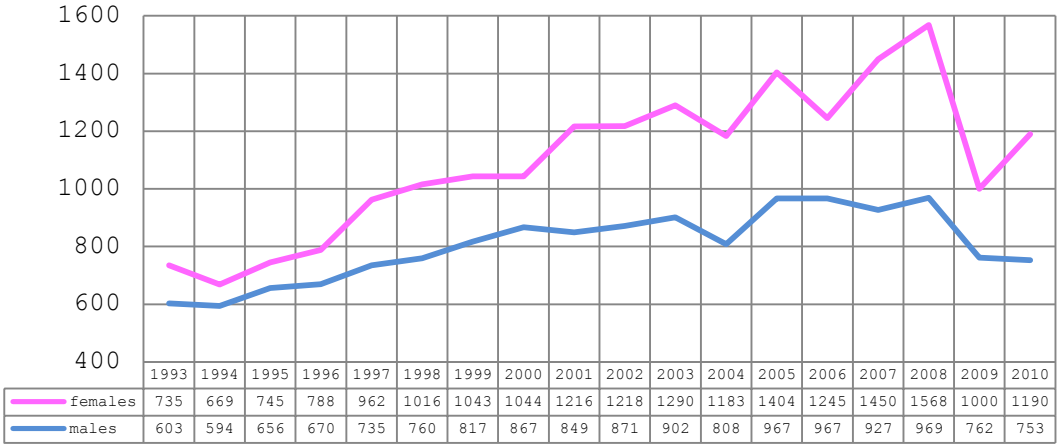
Figures 4.5 and 4.6 display the number of occurrences in each school year that an administratively-certified educator procured their first-ever campus leadership position, disaggregated by ethnicity and gender, respectively. Figure 4.5 suggests nearly parallel growth in first time administrative job procurement between Whites and Latinos, while growth amongst Black educators was slower. Just as in Figure 4.2, there is a steep drop off in 2009 for the number of educators getting their first administrative job.

Figure 4.5 - New Admin Jobs by Ethnicity



	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Black	170	145	155	189	192	227	205	207	297	261	252	226	288	288	303	343	206	277
Latino	255	241	265	286	320	363	334	393	361	427	463	460	555	555	563	572	390	434
White	901	865	965	976	1165	1161	1300	1287	1381	1376	1448	1277	1492	1492	1468	1584	1136	1204

Figure 4.6 - New Admin Jobs by Gender



	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
females	735	669	745	788	962	1016	1043	1044	1216	1218	1290	1183	1404	1245	1450	1568	1000	1190
males	603	594	656	670	735	760	817	867	849	871	902	808	967	967	927	969	762	753

After beginning at virtually the same level in 1993, figure 4.6 shows an increasingly widened gap over time for the procurement of first time administrative jobs between men and women. The year 2009 marks a very large drop off (-

568 or -36.2% drop) in the number of new administrative assignments for women. A similar, although far less severe drop occurred for male educators (-207 or -21.3% drop). A potential relationship between these 2009 onward changes in job securement and certificate production is explored in chapter five.

Distribution across and within campus roles.

In order to determine ethnicity and gender representation both within and across campus roles, I performed two separate cross tabulations for each of the 20 school years in the study – one with gender and role, the other with ethnicity and role. Individual school year cross tabulations were performed only upon educators with leadership administration certification valid during that particular year and working in one of three roles: 1) classroom teacher, 2) assistant principal, or 3) head principal.

Since the 1991-92 school year, White representation in campus leadership and teaching positions amongst the administratively-certified has dropped consistently over the years. At the highest, Whites accounted for 68% of assistant principals, 76% of head principals, and 73% of teachers – those numbers dropped to 56%, 66%, and 63%

respectively for the 2010-11 school year. Non-White representation has grown significantly and consistently over that same time frame. Administratively-certified, Black educators accounted for an all-time high[12] of 16.51% of assistant principals and 10.92% of head principals during the 2009-10 school year – up from 12.44% and 8.34% respectively in 1991-92. Administratively-certified, Latino educators account for 25.57 and 21.43 percent of assistant principals and head principals, respectively – up from a low of 18.36% and 15.21% during the 1991-92 school year.

Changes in gender representation tell a similar story. In 1991-92, females held 53.68% of administrative certifications while males had 46.32%. Female representation amongst this group has consistently risen since that time. In the 2010-11 school year, females accounted for 65.58% of certified educators in campus leadership positions in the classroom, while males accounted for the remaining 34.42%. Despite females holding the larger share of certifications, in 1991-92, they accounted for only 48.74% and 41.33% of assistant and head principal positions, respectively. Those figures have

[12] This includes 2011-12 data

steadily risen over time to an all-time high in 2009-10 with females accounting for over 63% of both assistant and head principal positions.

In 1991-92, males with administrative certification were far less likely than women to remain in the classroom. In fact, 35.1% of administratively-certified males were in the head principal position at that time, compared to just 21.34% of females. In that same year, 58.82% of administratively-certified females remained in the classroom while 59.28% of males were in campus leadership positions. These figures have changed greatly over time. Males are still more likely to be in a campus leadership position (41.2% of administratively-certified males remained in the classroom in 2010-11), however 52.89% of administratively-certified females in 2010-11 were either in the assistant or head principal position (leaving 47.11% of females in the classroom).

Tables A.2 through A.8 of the Appendix contain all of the cross tabulations and frequencies calculations for role with ethnicity, role with gender, role across ethnicity, role across gender, role within ethnicity, and role within gender.

Time between significant career events.

In Chapter three, I proposed to investigate different measures of time in the careers of Texas public school educators with administrative certification, employed at any time between the 1991-92 and 2010-11 school years. I suggested these measures of time would help to understand differences in careers paths of school administrators. These measures mark the passing of time between the occurrences of major events common to the careers of school administrators. Not all events of interest are shared amongst all administrators – for example, not all assistant principals will become head principals. All time variables are measured in years and are defined as follows:

time2 – time between initial system entry and first administrative certification
time3 – time between first administrative certification and placement into first campus leadership position (as either assistant principal or head principal).
time4 – time between first assistant principal assignment and first head principal assignment[13]
time5 – time between first administrative certification and head principal position
time6 – time between system entry and any administrative placement

[13] some individuals jump straight from classroom to head principalship and will not have a value for this measure

time7 – time between system entry and head principal placement

Table 4.1 displays the mean values of times two through seven disaggregated by ethnicity and gender. Because the full population of interest was used to determine these mean values for times two through seven, there is no need to determine the presence of significant difference across groups in table 4.1. In other words, these are the true means and any differences in values between groups are exactly what they are. That being said, these values are compiled only from individuals who successfully made the transition from one role to the next, as defined by the specific time measurement. Therefore, these figures do not take into account any between-group differences in probabilities to procure administrative positions, or the rates at which these procurements occur.

Table 4.1 – Mean Values of Time by Group

	Grand mean	Asian	Black	Latino	White	female	male
time2	10.29	7.00	10.22	10.44	10.40	11.36	8.52
time3	14.43	12.63	13.00	13.48	15.11	14.57	14.23
time4	4.07	4.33	4.44	4.07	4.01	4.12	4.00
time5	17.16	15.71	16.91	16.52	17.44	18.12	15.72
time6	13.59	11.91	12.79	13.07	14.01	14.16	12.67
time7	17.16	15.71	16.91	16.52	17.44	18.12	15.72

For the most part, differences between ethnicity groups are fairly small. There are however, exceptions. Asians procure promotion up the administrative hierarchy much more quickly than do Black, Latino, and White educators. Whites take about a year longer to gain administrative certification, and upon doing so, take two additional years to procure a campus leadership position. When it comes to gender, males advance through the system more quickly than do females. On average, males gain their certification three years before females, and make their way to the head principal position about 2.5 years prior to the average female. While certainly informative about educators who have entered the field of public school administration, these measurements of time don't tell us a great deal about the administrator selection process. The following section aims to do just that.

Inferential Statistics

A closer look at how these times differ across various intersections of ethnicity and gender can be constructed through the estimation of survival functions. Survival functions allow the researcher to quantify the rate at which groups of individuals "die" during a particular course of time, while simultaneously accounting for

censored cases. The terms *death* and *failure* in survival functions come from the field of biostatistics, as this type of research was originated to study infant mortality. In this paper, death or failure are not actually bad things, and are defined as the procurement of promotion up the administrative hierarchy.

Let us say that we are interested in how different ethnicity or gender groups experience the transition from initial certification to first assignment as an assistant principal. Procuring an assistant principal job would be considered a *death.* Let us also say that we consider all individuals certified after the 1991-92 school year to be at *hazard* for promotion. Again, hazard is not necessarily a bad thing, but rather indicates that an individual is at risk of experiencing the event of interest – promotion, in this case. Survival functions allow us to see how the paths of varying groups differ over time, while simultaneously taking into consideration individuals who are censored in the data set. To be censored means that an individual did not experience the event at the end of time measurement or that they became ineligible during time measurement. In the case of individuals being promoted to the assistant principalship, an example of a censored individual could be

someone that ascended from the classroom straight to the head principalship – therefore no longer being at hazard to become an assistant principal, or someone who made it to the 2010-11 school year (the final year of the data set) without leaving the classroom.

Survival functions add more nuance to the time measurements explored in the previous section as they allow us to graphically present the rates at which varying groups experience events. The graphical representation can also include intersectionality of ethnicity and gender. First, lets us review a graph representing all study participants.

Figure 4.7 – Kaplan-Meier – Years to Head Principalship – All participants

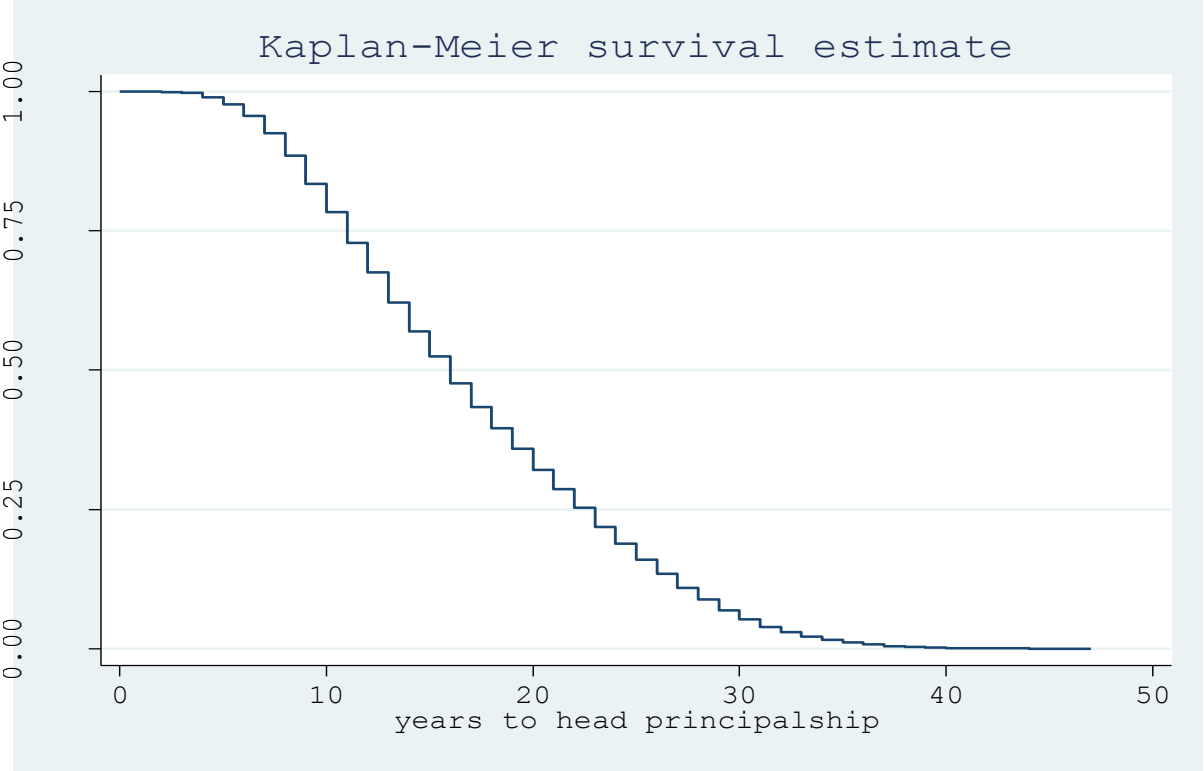
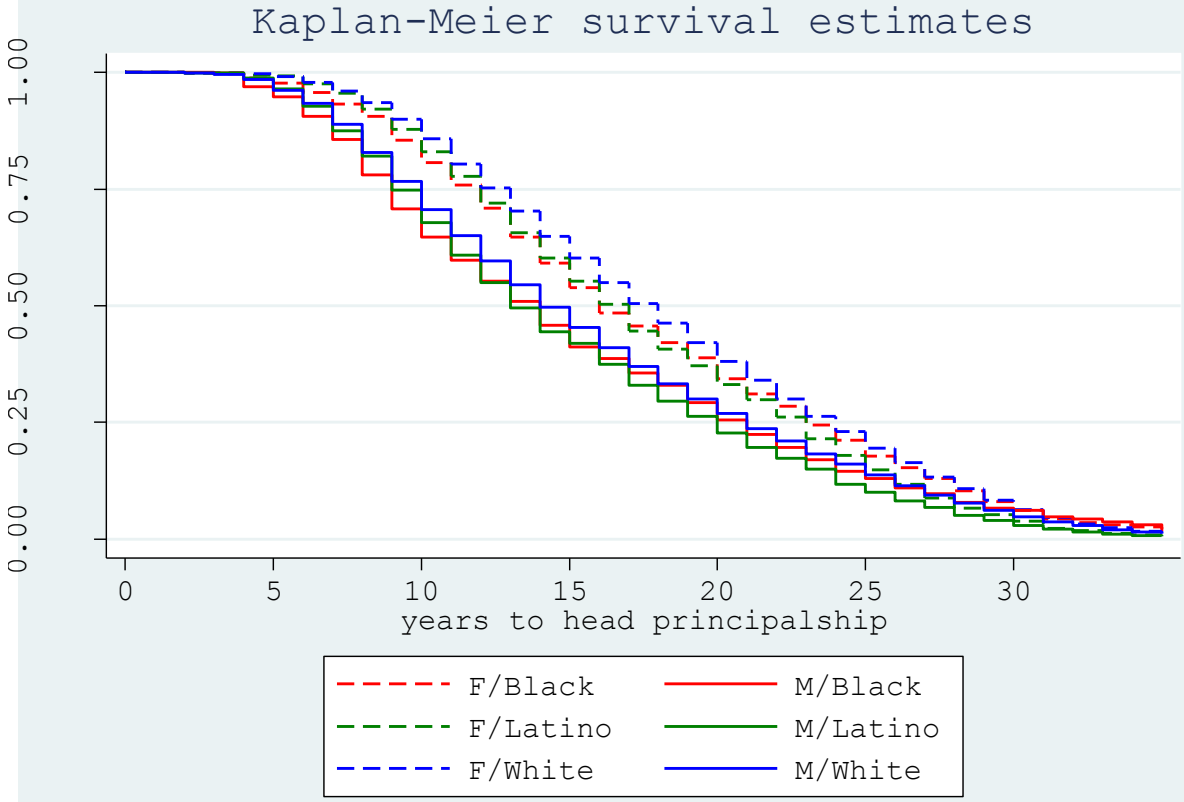


Figure 4.7 displays the hazard rates for all study participants to procure the position of head principalship. The sloping line and its component "steps" represent the change in risk to experience the event of interest (procuring head principalship) as time progresses in years across the x axis. The y axis values represent the proportion of the population still at risk to experience the event at a given time.

Figure 4.8 displays how the survivor functions differ for the three largest ethnicity groups of this study

crossed with gender – each line represents a differing intersection of ethnicity and gender.

Figure 4.8 – Kaplan-Meier - Years to Head Principalship – Gender by Ethnicity



As can be seen in the graph, more than half the members of all three male intersectionalities (solid lines) experience the event within 15 years. Black, Latina, and White females (dashed lines) take several more years to get to the same point.

Figure 4.9 – Kaplan-Meier - Years to Assistant Principalship – Ethnicity by Gender

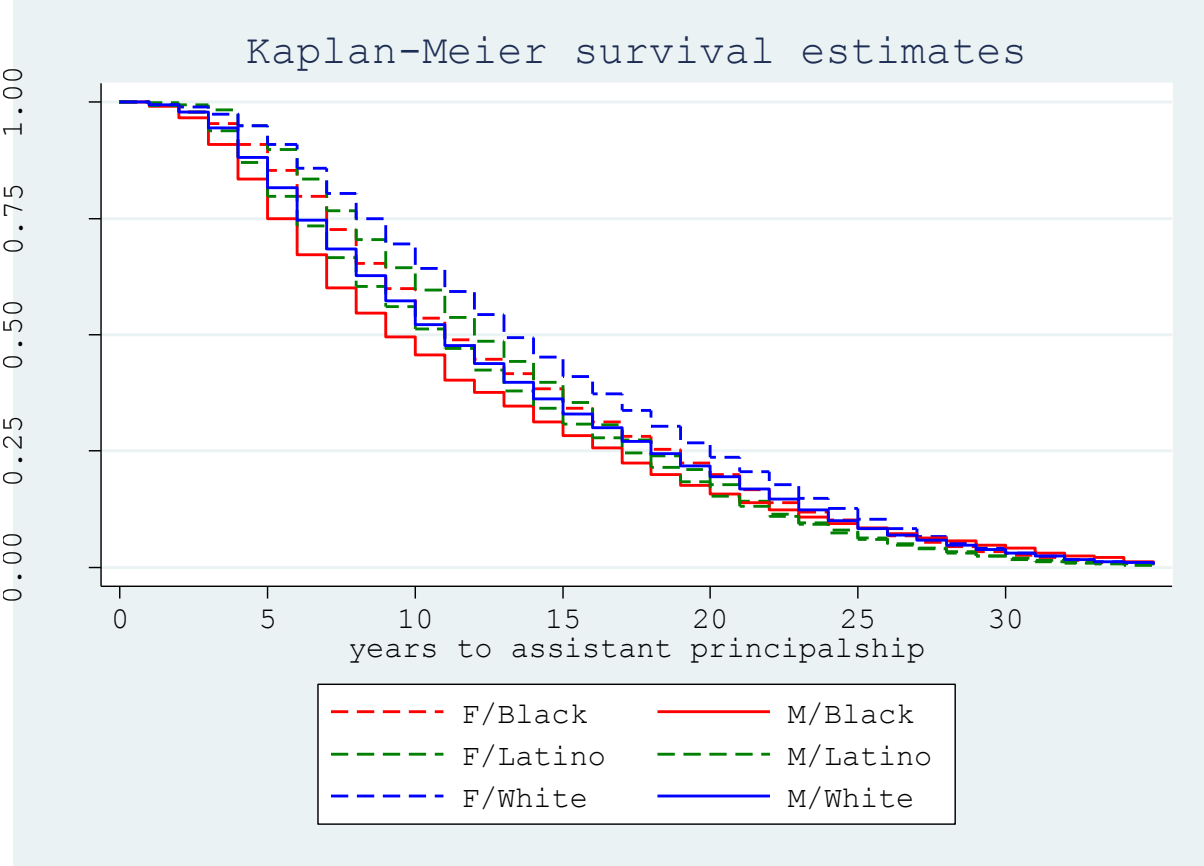
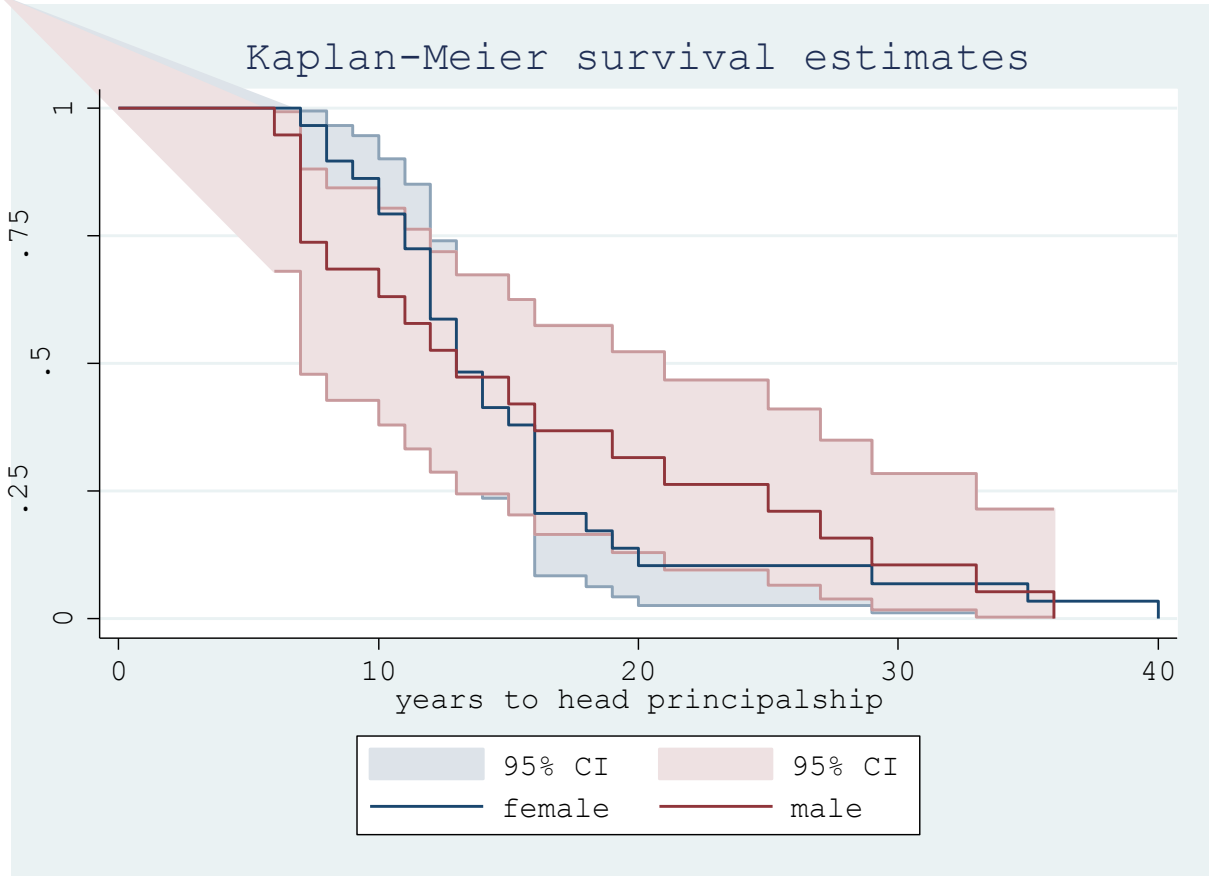


Figure 4.9 displays the same intersectionality groups' survival rates for the assistant principalship position. With the exception of Black males and White females, the separation between intersectionalities is less discernible for the assistant principalship, as evidenced by the tightly packed curves.

It should be noted that because the Asian group for both males and females is so small, the confidence interval for their survival rates is very large. Therefore,

graphical representation of their experiences compared with the other groups is difficult to interpret. The shaded bands surrounding the colored lines for males and females represent the area within which 95% of all cases would be expected to fall. Figure 4.10 is a graphical representation of these confidence intervals. Confidence intervals for all other groups, while not pictured, are very tight

Figure 4.10 - Kaplan-Meier – Years to Head Principalship – Asians by gender



In sum, the survival estimates show that disparities between groups are more strongly defined along gender lines than they are for ethnicity.

Research question 3.

The third research question of this paper seeks to determine what factors help explain the disproportionate assignment of campus leaders. Of specific interest is selection bias based upon an individual's ethnicity and gender. In Chapter three I proposed to calculate selection probabilities via multinomial logistic regression.

Multinomial logistic regression is much like binary logistic regression, but instead of calculating how covariates contribute to the odds of achieving one of two discrete outcomes, it allows the researcher to determine how covariates contribute to the odds of achieving one of *several* different outcomes. For this part of the paper, the outcomes of interest are the various roles that administratively-certified educators fill. The "baseline" or normal/expected outcome is to remain in the classroom. The other outcomes are 1) being an assistant principal, and 2) being a head principal. Multinomial logistic regression fixes to a value 0, the log odds of an individual with mean value of all covariates remaining in the classroom. I have

programmed Stata to report relative risk ratios (RRR) for each covariate. These RRRs represent the change in risk an individual would experience with a one unit increase in the covariate of interest. For all levels, the excluded comparison group is White females, since they make the majority of the education workforce[14]. Therefore, all significant RRRs within the results table can be read as the change in an individual's odds to be an assistant or head principal (depending which part of the table the RRR is being taken from), relative to White females, controlling for all other variables.

The table below lists the three levels of the dependent variable "admin". Recall that the base outcome is to remain in the classroom. Level two of admin is being an assistant principal, while level three is being a head principal. The variables listed within each level are the independent variables I have chosen to include in the model as covariates effecting odds for advancement. The P>|z| column reports the significance of each covariate, while

[14] While not required, standard practice with multinomial logistic regression is to set the largest subgroup in your data as the comparison group.

the z column reports the relative strength of influence that each covariate has in relation to the others.

Assuming statistical significance, independent variables with RRR values greater than 1.0 mean that a one-unit increase in that particular covariate is positively related to an individual's probability to be an assistant or head principal relative to White females.

Table 4.2 lists five significant covariates ($p < .05$) in the determination of an individual's probability to be promoted: these are being a Black male, being a Latino Male, the main effect of being male, one's age, and one's tenure[15,16]. All of these covariates are related to positive change in an individuals' relative risk with the exception of age. Age has a RRR value of less than 1.0 signifying a negative relationship. A deeper exploration of age and its relation to job procurements is provided in chapter five.

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[15] Table 4.2 is a much simpler model than others in this study created for later school years in which there is more information available. Table 4.2 is testing for the effects of ethnicity and gender, controlling only for an individuals' age and tenure. Age and tenure, while relevant, are hardly an exhaustive selection of independent variables in an ideal model testing for selection bias of administrators.

[16] tenure is defined as an individual's total number of years in the public education system at the year of analysis. It should be noted that

Table 4.2 - Relative Risk Ratios – 1991-92

admin	RRR	Std. Err.	z	P>|z|	[95% Conf.	Interval]
1	(base outcome)					
2						
Asian	.436495	.2342884	-1.54	0.122	.1524395	1.249859
Black	.8892755	.0699332	-1.49	0.136	.7622497	1.03747
Latino	1.121119	.081466	1.57	0.116	.9722974	1.292719
Other	.7036409	.277988	-0.89	0.374	.324389	1.526286
AsianMale	2.848278	1.787461	1.67	0.095	.8325371	9.744538
BlackMale	1.816439	.216406	5.01	0.000	1.438172	2.294198
LatinoMale	1.423529	.1463641	3.43	0.001	1.163718	1.741346
OtherMale	1.293968	.6524932	0.51	0.609	.4816139	3.476549
male	1.583787	.0712147	10.23	0.000	1.450183	1.729701
age	.9702733	.0025921	-11.30	0.000	.9652061	.9753672
tenure	1.013886	.0026226	5.33	0.000	1.008758	1.019039
3						
Asian	.7854809	.2962774	-0.64	0.522	.3750325	1.645138
Black	.7374034	.0586339	-3.83	0.000	.6309903	.8617626
Latino	1.261752	.0882057	3.33	0.001	1.100193	1.447036
Other	.3251662	.172459	-2.12	0.034	.1149879	.9195147
AsianMale	.6710508	.3248825	-0.82	0.410	.2598093	1.73323
BlackMale	.8493148	.1053615	-1.32	0.188	.6659984	1.083089
LatinoMale	.7089476	.0707435	-3.45	0.001	.5830095	.8620901
OtherMale	1.173456	.7461802	0.25	0.801	.3374444	4.080666
male	2.487052	.1016105	22.30	0.000	2.295664	2.694396
age	1.008648	.0024744	3.51	0.000	1.00381	1.01351
tenure	1.032329	.0023519	13.97	0.000	1.027729	1.036949

Results from multinomial logistic regressions are essentially meaningless if the assumption of independence of irrelevant alternatives (IIA) is violated. In this case, as the researcher, I am making the assumption that all alternatives outside of my model – that is to say, the inclusion of a role beyond being a classroom teacher or campus leader as an additional outcome level – would not affect the estimates of my model. If I were to exclude a 4th outcome level in which an individual becomes a

superintendent(a level excluded in this paper), I would have to prove that considering such an outcome wouldn't have a significant impact on my model's estimations. For all 20 years in the study, I tested for the independence of irrelevant outcomes in my state-wide models. All models passed the IIA tests with the exception of the 2001-02 model. The results of these tests can be found in Table A.8 of the appendix.

For each of the 20 years of the study, I conducted 20 additional models by region[17]. I used the 20 education service centers designed by the state as regional boundaries. These analyses allow me to determine how factors affecting selection differ throughout various regions of the state and how those differences have changed over time. I did the same for campus types as well. The data set is broken up into elementary, middle, secondary, and alternative campuses. In total, over 400 separate models were estimated to explore factors affecting the selection of school administrators. All of these models can be found in table A.8 of the appendix.

[17] A map of these regions is provided in Figure A.1 of the Appendix

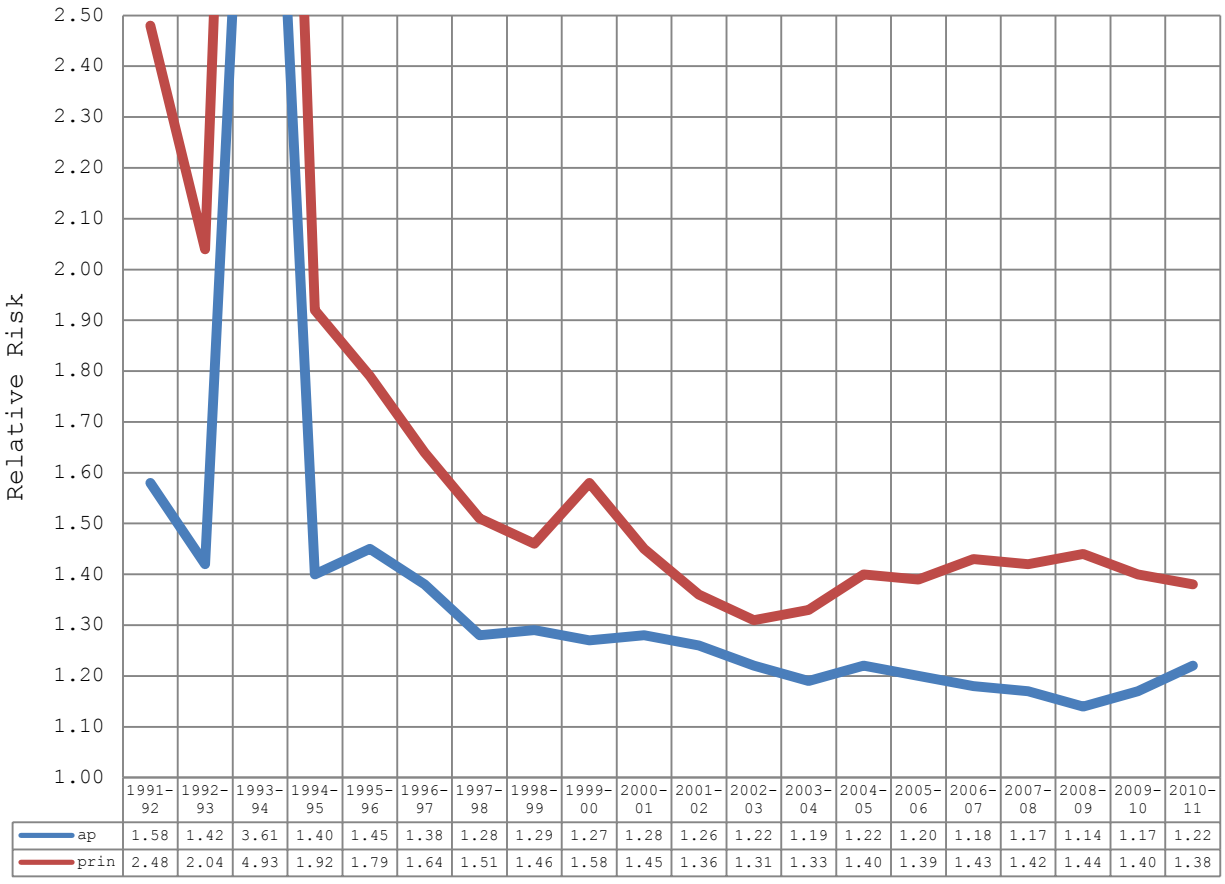
As the years progress from 1991 to 2011, TEA collected an increasingly informative amount of information about its employees. Therefore, the models increase with complexity over time as I'm able to add covariates which more richly describe the campuses in which the certified individuals are employed and the tenure they have built with their current district. Covariates I chose to include along these lines include the percentage of students of limited English proficiency, at risk, economically disadvantaged, Black, White, Latino, and mobile. I also include controls for the accountability rating of the campuses as well. The accountability ratings, determined by TEA and reported via AEIS assign a rating of Academically Unacceptable, Academically Acceptable, Recognized, and Exemplary based on a variety of campus outcomes not limited to, but including student performance on state standardized tests, attendance, dropout rates, and graduation rates.

The most salient themes that came from the 478 multinomial logistic regression models contained in this study are as follows:

1) The first models listed under each academic year in table A.8 of the appendix represent state-wide calculations. In all 20 statewide models, the effect of

being male is positively and significantly related to an individual's likelihood to be a campus administrator. The main effect for male is strongest at the middle and secondary school level. Figure 4.11 displays how the state-wide relative risk ratio for the male dependent variable has changed over time. As the years pass, the effect appears to be drawing closer to one, meaning that male advantage in procuring campus leadership positions has waned over time.

Figure 4.11 – RRR of "Male" over Time



	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
ap	1.58	1.42	3.61	1.40	1.45	1.38	1.28	1.29	1.27	1.28	1.26	1.22	1.19	1.22	1.20	1.18	1.17	1.14	1.17	1.22
prin	2.48	2.04	4.93	1.92	1.79	1.64	1.51	1.46	1.58	1.45	1.36	1.31	1.33	1.40	1.39	1.43	1.42	1.44	1.40	1.38

2) Black males are more likely to be assistant principals than head principals. This holds for virtually all models across time and region. The RRR assigned to the BlackMale covariate is almost always lower in level 3 (head principal) of the output table than in level 2 (assistant principal).

3) Coming from a school with high concentrations of Black, Latino, and mobile students is negatively associated with one's likelihood to become a campus leader.

4) Probabilities vary across school types. White female's strongest probabilities to be campus leaders lie at the elementary level. Non-Whites are more likely to find administrative placement in middle and secondary schools. This is particularly true for non-White males.

5) The RRRs of the independent variables vary across regions. For instance, in the same year, the male main effect in level two of admin varies from insignificant in one region all the way to 3.95 in another.

Conclusion

The analysis chapter of this study has covered a variety of reports and models across the descriptive and inferential statistical spectrums. Beginning with a complete analysis of the study participants, this chapter

segued into a response to research question one, which asked "What is the current state of leadership production in Texas and how has production trended over time?". Descriptive statistics showed a seemingly adequate pipeline of educational administration graduates that has grown steadily over time. The same was found to be true for new administration certificates. Interesting changes in administrator production and selection, to be discussed in the next chapter, were noted beginning in 2009.

Responses to the second research question sought to determine how the careers of administratively-certified educators differ across ethnicity and gender. Results showed that males have been and continue to be overrepresented in school administration. Historical trends have also shown that the White and male domination of school leadership, while still present, has continued to erode over time.

Comparisons of time between promotions of campus leaders, conducted across ethnicity and gender showed significant disparities between males and females. Differences between ethnicities were much smaller. These time comparisons only looked at individuals who had secured said promotions, therefore a closer look at careers by

ethnicity and gender was needed. Survivor functions showed females at a distinct disadvantage in terms of career promotions in school leadership, particularly at the head principal position.

Finally, a large set of multinomial logistic regression models (487) were estimated to see how ethnicity and gender relate to an individual's probability to become an assistant or head principal. A large number of independent variables were entered into these models to control for the overall number of years of experience in the Texas public education system, an individual's tenure as measured by the number of consecutive years employed with the same district, and school setting that the campus leadership candidates were coming from (i.e. accountability rating and student descriptives). These models found serious disparities between ethnicity groups and gender. Most differences in probabilities were explained by interactions between ethnicity and gender where White females were very likely to lead elementary campuses, but were less likely to gain other positions. Males, particularly at the middle and secondary level were far more likely to be campus leaders, especially head principals. The effect of ethnicity on one's probability to

become a campus leader was found to vary greatly across region of the state and school type. In sum, the multinomial logistic regression models created a strong case for the presence of gender and ethnicity-based bias in the selection and promotion of school leaders.

Chapter Five: Discussion

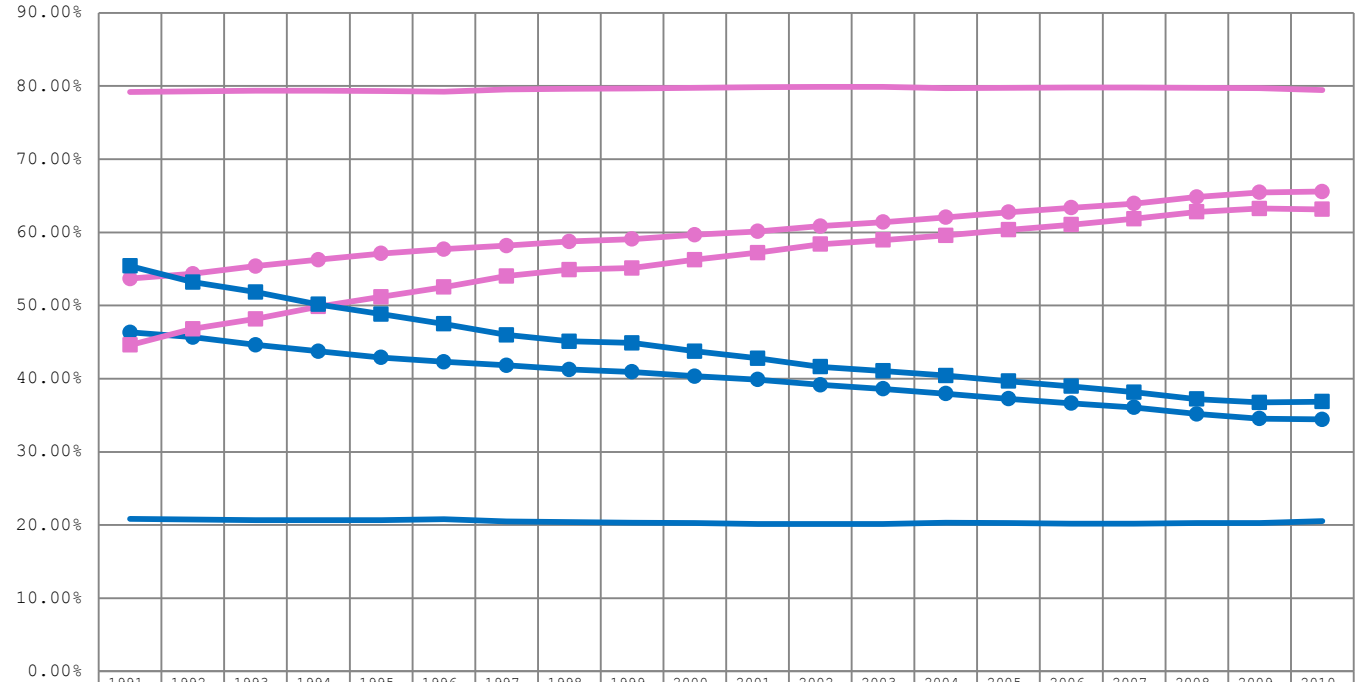
This paper has been an exploration of the overrepresentation of Whites and males amongst Texas public school leadership. Using a variety of descriptive and inferential techniques, I have sought to further understand disparities in the distribution of gender and ethnicity across educative roles for administratively-certified individuals. I have also explored the evidence for bias being amongst the factors affecting administrator selection in various regions, settings, and times across the state. Here in chapter five, I discuss the descriptives and model output from chapter four as I endeavor to tie these data together with the scholarship reviewed in chapter two and my own interpretations of the overrepresentation phenomena.

Interpretation of Findings

Chapter four began with an analysis of all research participants, followed by a compilation of descriptive statistics outlining changes in the representation of campus roles across and within gender over the 20 years of this study. A common thread from all of the descriptive statistics was a decreasing share of Whites and males over time in the state's educator workforce.

As mentioned in chapter four, the gender split over time in the Texas public school workforce has remained static at almost exactly 80% females and 20% males. This is displayed in Figure 5.1 below by the solid pink and blue lines riding the 80% and 20% horizontal gridlines (% workforce).

Figure 5.1 – Percentage Workforce, Certified Workforce, And Campus Administrators by Gender



	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
F % workforce	79.18%	79.26%	79.34%	79.35%	79.32%	79.21%	79.52%	79.60%	79.68%	79.73%	79.85%	79.88%	79.87%	79.70%	79.75%	79.80%	79.81%	79.75%	79.72%	79.45%
M % workforce	20.82%	20.74%	20.66%	20.65%	20.68%	20.79%	20.48%	20.40%	20.32%	20.27%	20.15%	20.12%	20.13%	20.30%	20.25%	20.20%	20.19%	20.25%	20.28%	20.55%
F % princert	53.68%	54.32%	55.37%	56.26%	57.10%	57.70%	58.17%	58.74%	59.08%	59.66%	60.13%	60.85%	61.39%	62.04%	62.74%	63.36%	63.93%	64.83%	65.47%	65.58%
M % princert	46.32%	45.68%	44.63%	43.74%	42.90%	42.30%	41.83%	41.26%	40.92%	40.34%	39.87%	39.15%	38.61%	37.96%	37.26%	36.64%	36.07%	35.17%	34.53%	34.42%
F % admin	44.60%	46.80%	48.16%	49.85%	51.17%	52.52%	54.02%	54.89%	55.12%	56.26%	57.22%	58.39%	58.95%	59.58%	60.34%	61.05%	61.86%	62.80%	63.24%	63.15%
M % admin	55.40%	53.20%	51.84%	50.15%	48.83%	47.48%	45.98%	45.11%	44.88%	43.74%	42.78%	41.61%	41.05%	40.42%	39.66%	38.95%	38.14%	37.20%	36.76%	36.85%

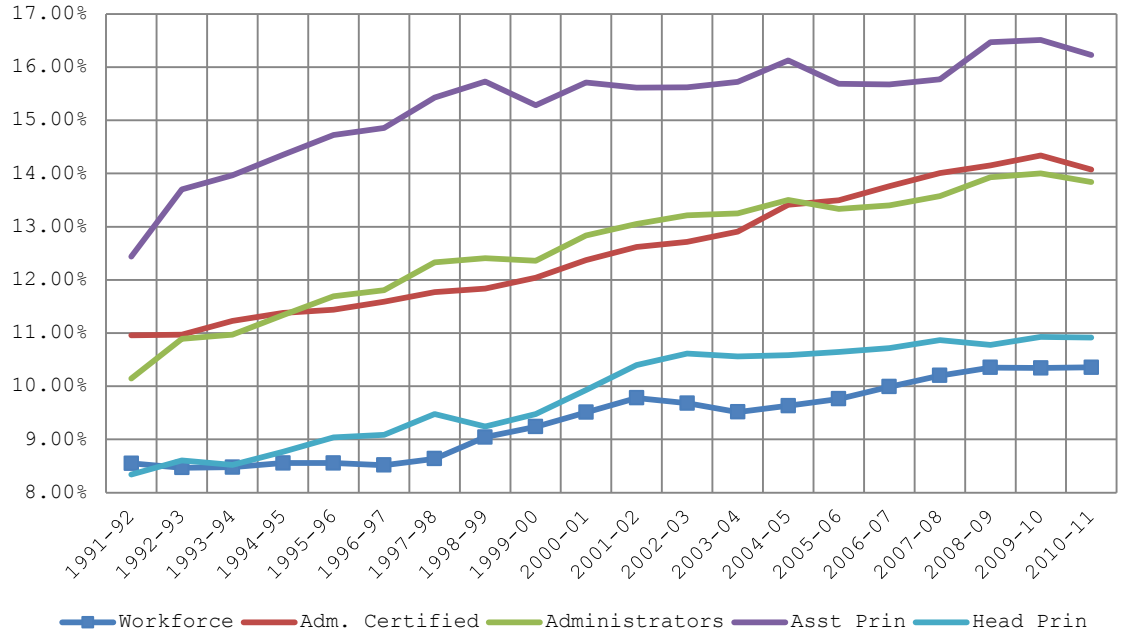
The lines marked with circles represent the shares of females and males amongst Texas public school educators holding valid administrative certification (% princert),

while the squared lines represent the gender breakdown of those assigned to administrative positions (% admin). What is clear from the chart is that for all years in the study, females make a significantly smaller portion of those with administrative certification and campus leadership roles than the overall educator workforce. Despite positive changes over time in the representation of females amongst the administratively-certified and campus leaders, there remains a distinct overrepresentation of males in the present day.

Group representation as it breaks down by ethnicity is a bit more complex, and varies greatly by role. Figures 5.2, 5.3, and 5.4 illustrate the representation of individuals within the Black, Latino, and White ethnicity groups amongst the public school workforce, educators with administrative certification (Adm. Certified), and campus leaders (Administrators). Further still, additional lines and frequencies are added to show how each ethnicity is broken down across the roles of assistant principal and head principal (asst. = assistant principals, prin = head principals). For all three figures, the line with square markers is the percentage of that ethnicity group's

representation amongst the public school educator workforce writ large.

Figure 5.2 – Black Representation Over Time



Black public school educators have historically represented a larger share of the administratively-certified and campus leader populations than they have the overall educator workforce. This trend continues today. What is particularly interesting about this is that despite this seeming favorable representation, Black educators have historically held and continue to hold head principal positions at a rate almost identical to their representation amongst the overall educator workforce. In other words, their favorable job placement rates stops at

the head principalship. At the assistant principalship, Black overrepresentation is typically resides at more than 50% of their share of the educator workforce in any given year. These figures suggest willingness amongst decision makers and gatekeepers to progressively support Black educators in school leadership, but only up to the level of assistant principal.

Figure 5.3 – Latino Representation over Time

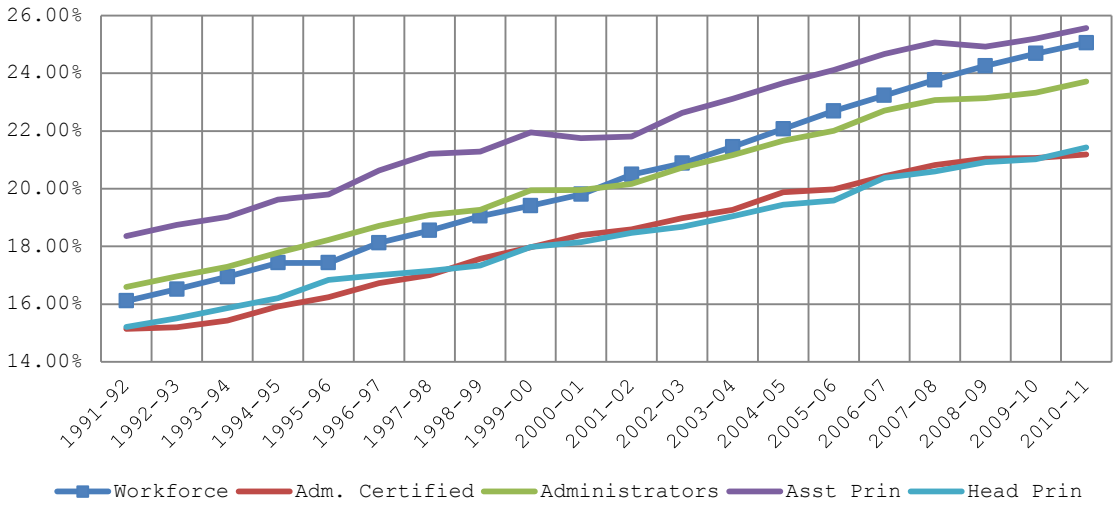
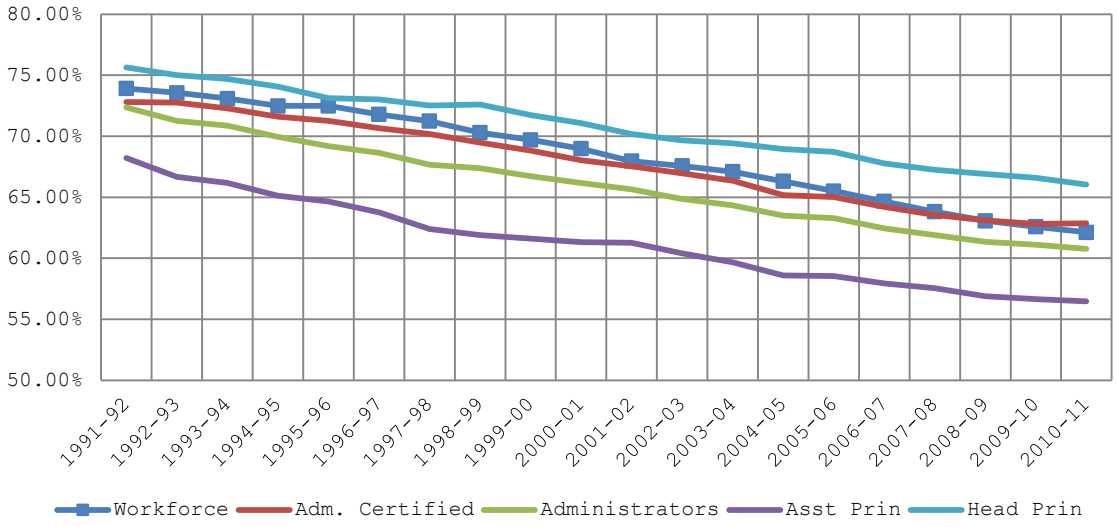


Figure 5.3 shows a tight grouping of employment and certification trends for Latinos in Texas public schools. The only position in which Latinos are overrepresented is in the assistant principalship; however this distinction appears to be shrinking over the past few years. A continuation of the trend lines at their current slopes suggests that Latinos would continue to increase their

share of the public school workforce, but at a rate which would outgrow their representation amongst the administratively-certified and campus leaders. In other words, there is potential for future underrepresentation of Latinos in school leadership across all roles[18].

Figure 5.4 – White Representation over Time



Whites appear to be fairly-equally represented amongst all administrators as they are within the overall educator workforce. Whites, however, have the privilege of having *maintained* and even *expanded* their overrepresentation

[18] Trends in the representation of Latino educators are of particular concern when results of the 2010 census are brought into consideration. Latinos currently account for 37.6% of Texas' population. One in four Latinos state-wide is of school age (5 to 18). 10% of all Latinos are aged 10 or under (compared to 7.0% of whites and 7.8% of Blacks). Together, these statistics suggests that the Latino share of the state's student and overall populations will continue to grow. (Census Bureau, 2010)

within the head principalship. At the same time, Whites have a large underrepresentation in the assistant principalship. The multinomial logistic regression results had significantly unfavorable RRRs for women to attain assistant leadership positions, particularly at the secondary level where the majority of these jobs exist – this explains the majority of the underrepresentation for Whites in the assistant principalship.

2009 bumps / Flooded Administrator Market.

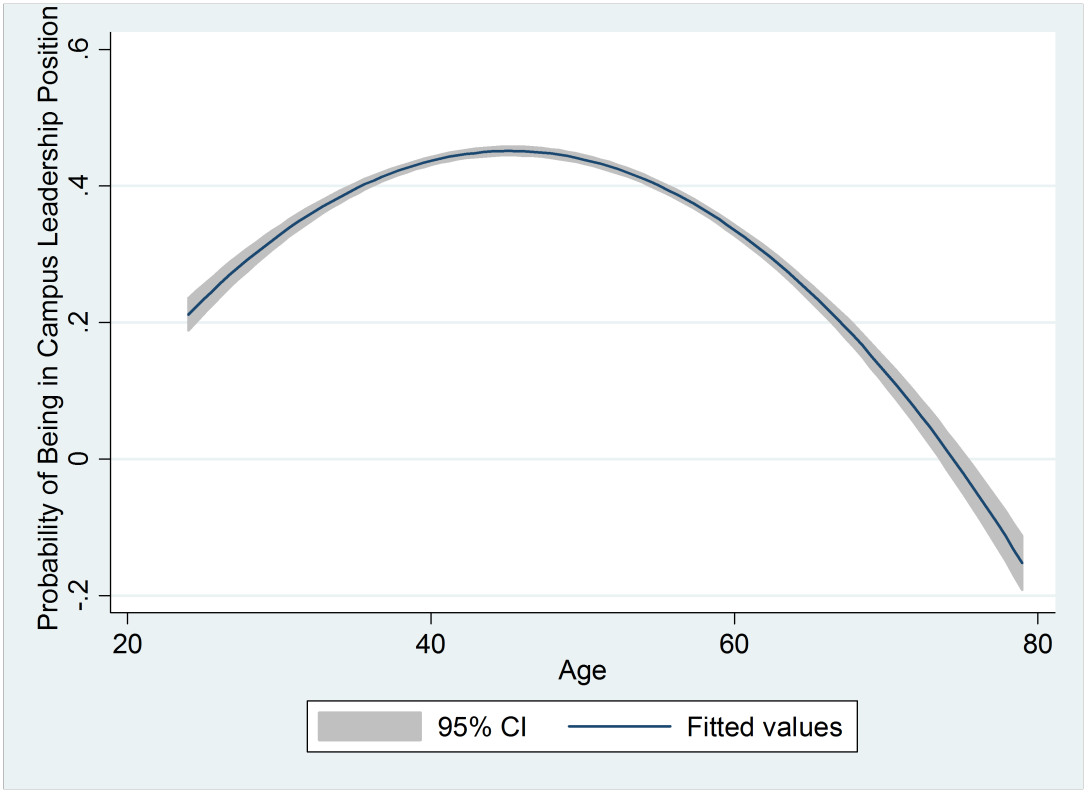
Figures 4.1 and 4.2 have very interesting bumps in the longitudinal trend of educational administration master's degree production and the procurement of first time campus leadership positions. An interesting change occurred in Texas' leadership preparation program landscape in the years preceding these bumps. Lamar University in Beaumont, Texas registered and enrolled its first online cohorts in its new educational administration master's program. The jump in degree production in 2009 is due almost exclusively to Lamar's first cohort graduating. In the Spring of 2009, Lamar had over 3,000 individuals concurrently enrolled in their educational administration master's program – the majority of them White females. The drop off in first time administrator job procurements which occurred in 2009

coincided with Lamar's first cohort's graduation - suggesting that gatekeepers declined to hire graduates of Lamar's program and took their chances with existing principals at a rate much higher than in years past.

Effect of age on likelihood to be campus leader.

In many of the multinomial logistic regression models, the effect of age was significant and negative. On the surface, this would suggest that each additional year in age is negatively associated with one's probability of becoming a principal. Surely that is not possible for all educators, especially those new to the profession with relatively new administrative certification. An alternative suggestion would be that there is a non-linear relationship between age and the log odds of procuring an administrative position. Novice educators and those in the twilight of their careers are rarely selected into leadership positions, either because they are not credentialed, aren't applying for those positions, deemed undesirable by gatekeepers, or some combination of these reasons. To test this alternative theory, figure 5.5 was constructed, which represents a quadratic fit between the probability of being an administrator with age.

Figure 5.5 - Effect of Age



As can be seen by the graph, the probability of being a campus leader is highest when an educator is in their late 40's. Additional analyses showed the effect of age to be similar across the various intersections of ethnicity and gender.

Black educators as assistant principals.

As figure 5.2 illustrated, administratively-certified, Black educators are far more likely to be assistant principals than they are head principals. I suggested this may be due to a propensity for gatekeepers to funnel Black

educators into assistant principal positions while simultaneously filtering them out of head principal positions. Additionally, I suggest this is occurring because district-level gatekeepers and White, male administrators at the middle and secondary level, especially those in urban school settings or campuses where the student population is more likely to contain non-Whites, are hiring Black, male, assistant principals to deal with student discipline.

The disproportionate discipline referral rates for young, Black, males is a crisis in our education system (Johnston, 2000; Monroe, 2005). I posit that Black, male assistant principals are brought in to address this issue in the role of campus disciplinarian.

In their interviews with Black educators about the lasting effects of the *Brown* decision, participants in Milner and Howard's study (2004) explained that Black educators whom were brought over to White schools during integration were put in charge of disciplining Black, male students. The respondents suggested this role assignment for Black administrators continues today, and has dealt a "devastating blow" to the relationship between Black male students and administrators. They explained that "Black

males were forced to see their Black leaders as disciplinarians whom they fear as opposed to Black leaders in whom they could admire and look to for mentorship" (p. 290).

The expectation and assumption for Black male administrators to be disciplinarians is further entrenched via popular media. Gooden (2012) describes how the stories of Joe Clark and Ronald Stone - Black urban school principals popularized in the films *Lean on Me* and *Heart of Stone* respectively - had major influence on the national conscience. These leaders had authoritarian leadership styles and a "no-nonsense" approach to discipline. Gooden explains that as influential individuals such as former secretary of education William Bennett began to champion Clark's leadership style, the archetypical role of the Black, male, disciplinarian campus administrator was constructed. I believe this archetype remains today and is evidenced in the role assignment of administratively-certified, Black, male educators in Texas.

Further Interpretations of Disproportionality

As I alluded to earlier, and wish to make very clear in this space, I believe that the discrepancies seen in all of the statistical models across gender, ethnicity, and the

various intersectionalities of the two, is due to racism and sexism amongst gatekeepers in our public school system. In our society, the dominant groups, Whites and males respectively, have the distinct privilege of being able to ignore their own race and gender while simultaneously ignoring or discounting the struggles encountered by those unlike themselves. It is this very privilege and the lack of acknowledgement for its existence that further cements the supremacy of Whites and males.

As the literature reviewed in chapter two suggested, people have preconceived notions of the leadership efficacy of individuals formed solely by their outside evaluation of a candidate's ethnicity and gender. I do not believe it is idealistic to assume that an ethnicity or gender group's representation amongst all levels of school leadership should fall in line with their share of the overall educator workforce. In fact, I suggest that to believe otherwise would be an indictment on one's beliefs about the inherent leadership abilities of people based upon their ethnicity and gender.

Much of the racism and sexism in our education system is rooted in our nation's history. In an analysis of New York state teachers employed between 1978 and 1988, Brewer

(1996) found that males were far more likely to procure administrative positions. He also discovered large and significant discrepancies in the salaries of males and females in the same role. Historical discrepancies in pay and responsibility are not unique to New York. These systematic differences in the pay and promotion of public educators act as signals from LEAs and SEAs suggesting that lower value should be placed upon the contributions of women to the education system. When these signals are out there for anyone inside or outside of the education system to see and be influenced by, their lasting effect cannot be ignored.

In an another incredibly detailed and thoughtful review of the lasting effects of the *Brown* decision on Black educators, Tillman (2004) makes the argument that the role and influence of Black administrators was greatly damaged during integration. She explains:

> During the period immediately following *Brown*, Whites believed that Black children had not learned because Black principals had not been effective in assuring that these children were educated. "Expert witnesses" who testified during a period of constant legal proceedings about the issue of desegregation called for the dismantling of all Black schools and replacing Black principals with White principals. (p. 293)

Further, Tillman cites Yeakey et. al., 1986 who proposed:

> Since racial patterns in most communities, especially those in the South did not countenance Blacks supervising Whites in any capacity, much less teaching, principals of formerly Black schools usually were reassigned as assistants to White principals or as central office supervisors. (p. 122)

Together, these quotations illustrate that early-on after the *Brown* decision, the script was flipped on the role and presumed efficacy of Black school leaders. Varying estimates in the article suggest that nearly three out of every four Black public school leaders in the South lost their jobs as a result of *Brown.* There is no universe in which such a widespread dismissal of Black leaders combined with official devaluations of their leadership efficacy could not have a lasting effect on Black school leaders today.

What's at stake when racism and sexism are a problem?

Contribution/Significance of Findings

As a result of this study, we have for the first time, comprehensive, longitudinal information about the trends in gender and ethnicity diversity amongst Texas public school leaders. As the findings have illustrated, we are not experiencing a simple cut and dry instance of White, male domination. Rather, there are stories to be told at the various intersections of ethnicity and gender as well. It

is my hope that this study sounds the alarm for the state and its component districts to revisit their decision-making and staffing strategies.

As I have stated, there is clear evidence of bias in our public education system, the same public education system teaching our kids that they can be anything they want to be, that diversity is a good thing, and that our society is a meritocracy. I have concerns about an education system that fails to mirror its own teachings. What sort of effect does this have on students? They are not blind, they see what is going on with school staffing, and are unquestionably affected by it.

Policy influence.

Making available to districts, data similar to that compiled by this study would be a wise policy decision on the part of TEA. Having mindfulness of where you are as a district with regards to staffing diversity, where you've been, and how things are trending over time, can go a long way in making positive changes for the future. I will not pretend that adding an additional layer of accountability to states and districts around their staffing policy is the correct answer. Instead, I think that facts and research have the potential to incentivize change within districts,

regions, and states. In some cases, simply providing awareness of disproportionality can serve as an impetus for change. Others organizations will need further incentive.

One piece of research that may serve an incentivizing role was conducted by Herring (2009), who made the argument that "diversity pays". Herring suggests that organizations' perspectives on diversity fall into one of three categories: 1) the value-in-diversity perspective which believes that a diverse workforce produces better business results, 2) the diversity-as-process-loss perspective which holds that diversity introduces conflict into an organization and negatively effects efficiency, and 3) a paradoxical combination of the first two which believes that diversity introduces group conflict *and* better business performance because the status quo is constantly being challenged. Herring reviewed data from 509 for-profit business organizations and found that higher levels of gender and ethnicity diversity within these organizations were positively related to increases in sales revenues, customer bases, and overall profits. Herring suggested these positive changes come about because increased diversity "allows companies to 'think outside the box' by brining previously excluded groups inside the box …

enhancing an organization's creativity, problem-solving, and performance" (p. 220).

While school districts and state education systems are not for-profit business organizations, Herring's findings remain encouraging. After all, school districts attempting to duplicate these findings would hardly be the first instance of education mimicking the business world.

Blueprint for additional research.

An additional contribution from this paper is the provision of a blueprint for conducting similar research in areas beyond Texas. I've purposely included a variety of quantitative techniques so that other states, regions, and districts can answer questions about employee diversity that are pertinent to their specific contexts. Additional studies such as these conducted on data from other areas can provide a more rich description of the current state of our nation's educational administrators. I intend to be a point of reference for anyone interested in the methods or coding used in this study.

Next Steps

As with any study, results ask just as many questions as they answer, if not more. One prevailing question I have asks why the main effect for gender has remained so strong

over time. I believe that revisiting my research questions with more nuanced data would provide some additional context in this area. For instance, I did not control for the rate at which individuals *applied to* and accepted *interviews for*, open administrative positions. Administering surveys to a selected subsample of this study's participants could go a long way in determining if there are systematic differences in the rates at which males and females, or even different ethnicities, apply for and accept interviews for campus leadership openings.

An additional data point that would improve future iterations of this research strand would be the inclusion of individual educational history. Adding variables which rate the quality of each educator's undergraduate and graduate institution would be ideal. It can be argued that educational history not only plays a role in the hiring of leadership candidates, but also in the leadership skills said candidates have. One approach to controlling for individual educator's educational history can be found in Fuller, Baker, & Young's (2011) work, which utilized Carnegie classifications to group the leadership preparation programs their study participants came from.

I also would like to broaden my future studies to consider identities beyond the intersectionalities explored in this study. Holvino (2010) calls for studies exploring ethnicity and gender to expand and include measures for class, sexuality, and gender identities beyond the traditional, discrete categories of male and female. She suggests that:

> "essentialized identities produced and reproduced through social and organizational practices can be disrupted by the collection and dissemination of … differentiated stories and narratives that focus on the complexity of identity-subjectivities" (p. 264).

Procuring these additional data is an entirely different discussion, but is certainly possible through the use of well-designed and intelligently-administrated surveys.

Finally, I would like to recognize that research in our discipline excels at pointing out problems while failing to provide solutions. In sincere hopes of avoiding this common pitfall, I find promise in *performative critical diversity studies*. Described by Zanoni, Janssens, Benschop, and Nkomo (2010), performative critical diversity studies explicitly aim to stimulate social change and "take an agentic perspective to show how the concept of diversity can be strategically deployed by practitioners to achieve

forms of social change" (p. 19). Such studies go beyond participatory research in that strategic, goal-defined, partnerships are created between the researcher and the study participants. I hope that a partnership, or even partnerships of this nature can be formed between myself and organizations that are serious about making positive changes in their administrator selection practice.

Concluding Remarks

Ethnicity and to an extent, even gender, are socially constructed groups we try to force people into - groups even this dissertation has forced people into. I hope it is clear to the reader why such classifications were used for this study. I am working toward a progressive cause in an attempt to vanquish the status quo. It is my sincerest hope that this paper has created a critical space to discuss underrepresentation in Texas public school administration so that positive, permanent change can come about in the near future.

Appendix

Figure A.1 – Map of Regional Education Service Centers

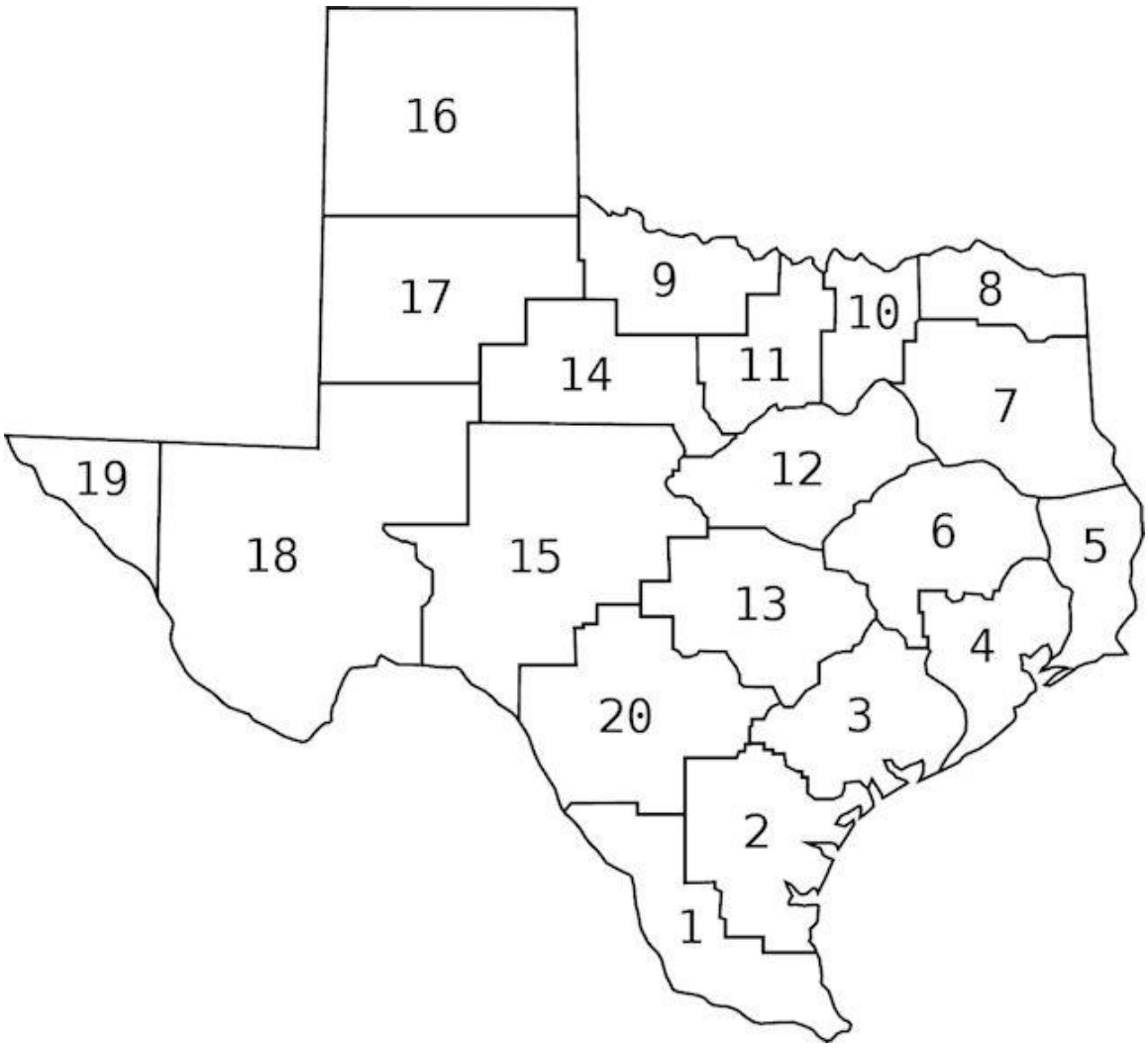


Table A.1 – Crosstabs of Gender and Ethnicity

	Ethnicity	Female	Male	Total
1991-92	Asian	1,284	421	1,705
	Black	19,586	4,341	23,927
	Latino	34,959	10,128	45,087
	Other	1,816	437	2,253
	White	163,911	42,914	206,825
	Total	221,556	58,241	279,797
1992-93	Ethnicity	Female	Male	Total
	Asian	1,330	444	1,774
	Black	20,156	4,552	24,708
	Latino	37,291	10,901	48,192
	Other	1,982	489	2,471
	White	170,455	44,127	214,582
	Total	231,214	60,513	291,727
1993-94	Ethnicity	Female	Male	Total
	Asian	1,419	452	1,871
	Black	20,757	4,806	25,563
	Latino	39,567	11,535	51,102
	Other	2,112	517	2,629
	White	175,377	44,978	220,355
	Total	239,232	62,288	301,520
1994-95	Ethnicity	Female	Male	Total
	Asian	1,522	479	2,001
	Black	21,826	5,119	26,945
	Latino	42,554	12,338	54,892
	Other	2,241	576	2,817
	White	181,765	46,516	228,281
	Total	249,908	65,028	314,936
1995-96	Ethnicity	Female	Male	Total
	Asian	1,618	475	2,093

	Black	22,356	5,273	27,629
	Latino	44,575	12,974	57,549
	Other	2,324	625	2,949
	White	185,500	47,512	233,012
	Total	256,373	66,859	323,232
	Ethnicity	Female	Male	Total
	Asian	1,674	487	2,161
	Black	22,732	5,553	28,285
1996-97	Latino	46,476	13,716	60,192
	Other	2,384	650	3,034
	White	189,756	48,628	238,384
	Total	263,022	69,034	332,056
	Ethnicity	Female	Male	Total
	Asian	1,752	493	2,245
	Black	24,065	5,824	29,889
1997-98	Latino	49,862	14,348	64,210
	Other	2,527	686	3,213
	White	197,010	49,524	246,534
	Total	275,216	70,875	346,091
	Ethnicity	Female	Male	Total
	Asian	1,900	516	2,416
	Black	26,052	6,296	32,348
1998-99	Latino	53,121	15,016	68,137
	Other	2,604	732	3,336
	White	201,031	50,410	251,441
	Total	284,708	72,970	357,678
	Ethnicity	Female	Male	Total
	Asian	1,991	555	2,546
	Black	27,437	6,613	34,050
1999-00	Latino	55,995	15,554	71,549
	Other	2,728	787	3,515
	White	205,528	51,378	256,906
	Total	293,679	74,887	368,566
	Ethnicity	Female	Male	Total
	Asian	2,140	591	2,731
2000-01	Black	29,007	7,036	36,043
	Latino	58,868	16,173	75,041

	Other	2,845	866	3,711
	White	209,277	52,155	261,432
	Total	302,137	76,821	378,958
	Ethnicity	Female	Male	Total
	Asian	2,370	604	2,974
	Black	30,891	7,460	38,351
2001-02	Latino	63,224	17,121	80,345
	Other	3,017	946	3,963
	White	213,615	52,886	266,501
	Total	313,117	79,017	392,134
	Ethnicity	Female	Male	Total
	Asian	2,688	692	3,380
	Black	30,968	7,624	38,592
2002-03	Latino	65,557	17,664	83,221
	Other	3,119	969	4,088
	White	216,113	53,240	269,353
	Total	318,445	80,189	398,634
	Ethnicity	Female	Male	Total
	Asian	2,909	740	3,649
	Black	30,591	7,467	38,058
2003-04	Latino	67,496	18,281	85,777
	Other	3,101	997	4,098
	White	215,299	53,027	268,326
	Total	319,396	80,512	399,908
	Ethnicity	Female	Male	Total
	Asian	3,088	767	3,855
	Black	31,340	7,859	39,199
2004-05	Latino	70,435	19,386	89,821
	Other	3,140	1,070	4,210
	White	216,350	53,521	269,871
	Total	324,353	82,603	406,956
	Ethnicity	Female	Male	Total
	Asian	3,274	812	4,086
	Black	32,591	8,168	40,759
2005-06	Latino	74,282	20,474	94,756
	Other	3,300	1,136	4,436
	White	219,551	53,979	273,530

	Total	332,998	84,569	417,567
2006-07	Ethnicity	Female	Male	Total
	Asian	3,520	885	4,405
	Black	34,250	8,667	42,917
	Latino	78,250	21,514	99,764
	Other	3,508	1,180	4,688
	White	223,198	54,527	277,725
	Total	342,726	86,773	429,499
2007-08	Ethnicity	Female	Male	Total
	Asian	3,817	935	4,752
	Black	36,044	9,181	45,225
	Latino	82,739	22,601	105,340
	Other	3,808	1,280	5,088
	White	227,369	55,498	282,867
	Total	353,777	89,495	443,272
2008-09	Ethnicity	Female	Male	Total
	Asian	4,001	1,017	5,018
	Black	37,099	9,570	46,669
	Latino	85,886	23,473	109,359
	Other	4,075	1,362	5,437
	White	228,484	55,885	284,369
	Total	359,545	91,307	450,852
2009-10	Ethnicity	Female	Male	Total
	Asian	4,261	1,069	5,330
	Black	37,744	9,973	47,717
	Latino	89,607	24,262	113,869
	Other	4,296	1,419	5,715
	White	231,878	56,866	288,744
	Total	367,786	93,589	461,375
2010-11	Ethnicity	Female	Male	Total
	Asian	4,382	1,123	5,505
	Black	37,592	10,178	47,770
	Latino	90,682	24,893	115,575
	Other	4,415	1,473	5,888
	White	229,435	57,132	286,567
	Total	366,506	94,799	461,305

Table A.2 – Cross Tabulations of Role with Ethnicity

1991-92		Asian	Black	Latino	Other	White	Total
	ap	19	527	778	23	2,890	4,237
	prin	29	448	817	15	4,063	5,372
	teacher	55	1,149	1,342	69	7,163	9,778
	Total	103	2,124	2,937	107	14,116	19,387
1992-93		Asian	Black	Latino	Other	White	Total
	ap	21	600	821	17	2,920	4,379
	prin	26	462	833	21	4,028	5,370
	teacher	53	1,119	1,367	74	7,516	10,129
	Total	100	2,181	3,021	112	14,464	19,878
1993-94		Asian	Black	Latino	Other	White	Total
	ap	18	626	853	20	2,966	4,483
	prin	25	467	870	25	4,095	5,482
	teacher	47	1,190	1,415	77	7,636	10,365
	Total	90	2,283	3,138	122	14,697	20,330
1994-95		Asian	Black	Latino	Other	White	Total
	ap	13	672	919	29	3,049	4,682
	prin	26	483	893	27	4,079	5,508
	teacher	43	1,231	1,526	89	7,884	10,773
	Total	82	2,386	3,338	145	15,012	20,963
1995-96		Asian	Black	Latino	Other	White	Total
	ap	16	722	971	24	3,171	4,904
	prin	25	507	945	31	4,102	5,610
	teacher	46	1,210	1,547	85	7,915	10,803
	Total	87	2,439	3,463	140	15,188	21,317
1996-97		Asian	Black	Latino	Other	White	Total
	ap	15	761	1,057	24	3,266	5,123
	prin	24	521	975	27	4,187	5,734
	teacher	47	1,237	1,604	88	7,902	10,878
	Total	86	2,519	3,636	139	15,355	21,735
1997-98		Asian	Black	Latino	Other	White	Total
	ap	20	836	1,149	33	3,381	5,419
	prin	20	557	1,008	31	4,262	5,878
	teacher	41	1,222	1,621	89	7,947	10,920
	Total	81	2,615	3,778	153	15,590	22,217
1998-99		Asian	Black	Latino	Other	White	Total
	ap	25	900	1,218	37	3,541	5,721

	prin	18	556	1,043	32	4,366	6,015
	teacher	48	1,273	1,790	100	8,112	11,323
	Total	91	2,729	4,051	169	16,019	23,059
1999-00		Asian	Black	Latino	Other	White	Total
	ap	27	922	1,324	43	3,717	6,033
	prin	17	580	1,100	32	4,389	6,118
	teacher	56	1,318	1,784	101	8,006	11,265
	Total	100	2,820	4,208	176	16,112	23,416
2000-01		Asian	Black	Latino	Other	White	Total
	ap	30	994	1,376	47	3,880	6,327
	prin	16	621	1,135	37	4,445	6,254
	teacher	59	1,296	1,816	98	7,682	10,951
	Total	105	2,911	4,327	182	16,007	23,532
2001-02		Asian	Black	Latino	Other	White	Total
	ap	33	1,023	1,429	52	4,015	6,552
	prin	19	657	1,167	40	4,435	6,318
	teacher	51	1,368	1,896	109	7,865	11,289
	Total	103	3,048	4,492	201	16,315	24,159
2002-03		Asian	Black	Latino	Other	White	Total
	ap	33	1,070	1,550	60	4,136	6,849
	prin	23	674	1,186	43	4,422	6,348
	teacher	56	1,388	1,938	119	7,934	11,435
	Total	112	3,132	4,674	222	16,492	24,632
2003-04		Asian	Black	Latino	Other	White	Total
	ap	39	1,098	1,614	66	4,167	6,984
	prin	20	680	1,226	42	4,469	6,437
	teacher	76	1,503	2,059	131	8,230	11,999
	Total	135	3,281	4,899	239	16,866	25,420
2004-05		Asian	Black	Latino	Other	White	Total
	ap	45	1,178	1,728	74	4,280	7,305
	prin	18	697	1,280	50	4,539	6,584
	teacher	69	1,608	2,153	143	8,101	12,074
	Total	132	3,483	5,161	267	16,920	25,963
2005-06		Asian	Black	Latino	Other	White	Total
	ap	46	1,194	1,835	80	4,456	7,611
	prin	22	708	1,303	48	4,569	6,650
	teacher	67	1,643	2,111	132	8,055	12,008
	Total	135	3,545	5,249	260	17,080	26,269
2006-		Asian	Black	Latino	Other	White	Total

07	ap	48	1,256	1,977	90	4,643	8,014
	prin	28	728	1,384	49	4,602	6,791
	teacher	78	1,736	2,164	141	8,109	12,228
	Total	154	3,720	5,525	280	17,354	27,033
2007-08		Asian	Black	Latino	Other	White	Total
	ap	44	1,336	2,124	92	4,876	8,472
	prin	31	748	1,418	58	4,628	6,883
	teacher	86	1,806	2,240	140	8,147	12,419
	Total	161	3,890	5,782	290	17,651	27,774
2008-09		Asian	Black	Latino	Other	White	Total
	ap	54	1,434	2,170	96	4,953	8,707
	prin	32	757	1,469	67	4,698	7,023
	teacher	89	1,900	2,444	154	8,586	13,173
	Total	175	4,091	6,083	317	18,237	28,903
2009-10		Asian	Black	Latino	Other	White	Total
	ap	56	1,456	2,222	89	4,995	8,818
	prin	32	785	1,510	73	4,784	7,184
	teacher	117	2,085	2,623	173	9,171	14,169
	Total	205	4,326	6,355	335	18,950	30,171
2010-11		Asian	Black	Latino	Other	White	Total
	ap	66	1,445	2,277	88	5,030	8,906
	prin	33	793	1,557	84	4,797	7,264
	teacher	102	1,906	2,402	179	8,681	13,270
	Total	201	4,144	6,236	351	18,508	29,440

Table A.3 – Frequencies of Role across Ethnicity

		role representation across race				
1991-92		Asian	Black	Latino	Other	White
	ap	0.45%	12.44%	18.36%	0.54%	68.21%
	prin	0.54%	8.34%	15.21%	0.28%	75.63%
	teacher	0.56%	11.75%	13.72%	0.71%	73.26%
	Total	0.53%	10.96%	15.15%	0.55%	72.81%
1992-93		Asian	Black	Latino	Other	White
	ap	0.48%	13.70%	18.75%	0.39%	66.68%
	prin	0.48%	8.60%	15.51%	0.39%	75.01%
	teacher	0.52%	11.05%	13.50%	0.73%	74.20%
	Total	0.50%	10.97%	15.20%	0.56%	72.76%
1993-94		Asian	Black	Latino	Other	White
	ap	0.40%	13.96%	19.03%	0.45%	66.16%
	prin	0.46%	8.52%	15.87%	0.46%	74.70%
	teacher	0.45%	11.48%	13.65%	0.74%	73.67%
	Total	0.44%	11.23%	15.44%	0.60%	72.29%
1994-95		Asian	Black	Latino	Other	White
	ap	0.28%	14.35%	19.63%	0.62%	65.12%
	prin	0.47%	8.77%	16.21%	0.49%	74.06%
	teacher	0.40%	11.43%	14.17%	0.83%	73.18%
	Total	0.39%	11.38%	15.92%	0.69%	71.61%
1995-96		Asian	Black	Latino	Other	White
	ap	0.33%	14.72%	19.80%	0.49%	64.66%
	prin	0.45%	9.04%	16.84%	0.55%	73.12%
	teacher	0.43%	11.20%	14.32%	0.79%	73.27%
	Total	0.41%	11.44%	16.25%	0.66%	71.25%
1996-97		Asian	Black	Latino	Other	White
	ap	0.29%	14.85%	20.63%	0.47%	63.75%
	prin	0.42%	9.09%	17.00%	0.47%	73.02%
	teacher	0.43%	11.37%	14.75%	0.81%	72.64%
	Total	0.40%	11.59%	16.73%	0.64%	70.65%
1997-98		Asian	Black	Latino	Other	White
	ap	0.37%	15.43%	21.20%	0.61%	62.39%
	prin	0.34%	9.48%	17.15%	0.53%	72.51%
	teacher	0.38%	11.19%	14.84%	0.82%	72.77%
	Total	0.36%	11.77%	17.00%	0.69%	70.17%
1998-		Asian	Black	Latino	Other	White

99	ap	0.44%	15.73%	21.29%	0.65%	61.89%
	prin	0.30%	9.24%	17.34%	0.53%	72.59%
	teacher	0.42%	11.24%	15.81%	0.88%	71.64%
	Total	0.39%	11.83%	17.57%	0.73%	69.47%
1999-00		Asian	Black	Latino	Other	White
	ap	0.45%	15.28%	21.95%	0.71%	61.61%
	prin	0.28%	9.48%	17.98%	0.52%	71.74%
	teacher	0.50%	11.70%	15.84%	0.90%	71.07%
	Total	0.43%	12.04%	17.97%	0.75%	68.81%
2000-01		Asian	Black	Latino	Other	White
	ap	0.47%	15.71%	21.75%	0.74%	61.32%
	prin	0.26%	9.93%	18.15%	0.59%	71.07%
	teacher	0.54%	11.83%	16.58%	0.89%	70.15%
	Total	0.45%	12.37%	18.39%	0.77%	68.02%
2001-02		Asian	Black	Latino	Other	White
	ap	0.50%	15.61%	21.81%	0.79%	61.28%
	prin	0.30%	10.40%	18.47%	0.63%	70.20%
	teacher	0.45%	12.12%	16.80%	0.97%	69.67%
	Total	0.43%	12.62%	18.59%	0.83%	67.53%
2002-03		Asian	Black	Latino	Other	White
	ap	0.48%	15.62%	22.63%	0.88%	60.39%
	prin	0.36%	10.62%	18.68%	0.68%	69.66%
	teacher	0.49%	12.14%	16.95%	1.04%	69.38%
	Total	0.45%	12.72%	18.98%	0.90%	66.95%
2003-04		Asian	Black	Latino	Other	White
	ap	0.56%	15.72%	23.11%	0.95%	59.66%
	prin	0.31%	10.56%	19.05%	0.65%	69.43%
	teacher	0.63%	12.53%	17.16%	1.09%	68.59%
	Total	0.53%	12.91%	19.27%	0.94%	66.35%
2004-05		Asian	Black	Latino	Other	White
	ap	0.62%	16.13%	23.66%	1.01%	58.59%
	prin	0.27%	10.59%	19.44%	0.76%	68.94%
	teacher	0.57%	13.32%	17.83%	1.18%	67.09%
	Total	0.51%	13.42%	19.88%	1.03%	65.17%
2005-06		Asian	Black	Latino	Other	White
	ap	0.60%	15.69%	24.11%	1.05%	58.55%
	prin	0.33%	10.65%	19.59%	0.72%	68.71%
	teacher	0.56%	13.68%	17.58%	1.10%	67.08%
	Total	0.51%	13.49%	19.98%	0.99%	65.02%

		Asian	Black	Latino	Other	White
2006-07	ap	0.60%	15.67%	24.67%	1.12%	57.94%
	prin	0.41%	10.72%	20.38%	0.72%	67.77%
	teacher	0.64%	14.20%	17.70%	1.15%	66.32%
	Total	0.57%	13.76%	20.44%	1.04%	64.20%
		Asian	Black	Latino	Other	White
2007-08	ap	0.52%	15.77%	25.07%	1.09%	57.55%
	prin	0.45%	10.87%	20.60%	0.84%	67.24%
	teacher	0.69%	14.54%	18.04%	1.13%	65.60%
	Total	0.58%	14.01%	20.82%	1.04%	63.55%
		Asian	Black	Latino	Other	White
2008-09	ap	0.62%	16.47%	24.92%	1.10%	56.89%
	prin	0.46%	10.78%	20.92%	0.95%	66.89%
	teacher	0.68%	14.42%	18.55%	1.17%	65.18%
	Total	0.61%	14.15%	21.05%	1.10%	63.10%
		Asian	Black	Latino	Other	White
2009-10	ap	0.64%	16.51%	25.20%	1.01%	56.65%
	prin	0.45%	10.93%	21.02%	1.02%	66.59%
	teacher	0.83%	14.72%	18.51%	1.22%	64.73%
	Total	0.68%	14.34%	21.06%	1.11%	62.81%
		Asian	Black	Latino	Other	White
2010-11	ap	0.74%	16.23%	25.57%	0.99%	56.48%
	prin	0.45%	10.92%	21.43%	1.16%	66.04%
	teacher	0.77%	14.36%	18.10%	1.35%	65.42%
	Total	0.68%	14.08%	21.18%	1.19%	62.87%

Table A.4 – Frequencies of Role within Ethnicity

	role representation within race					
1991-92		Asian	Black	Latino	Other	White
	ap	18.45%	24.81%	26.49%	21.50%	20.47%
	prin	28.16%	21.09%	27.82%	14.02%	28.78%
	teacher	53.40%	54.10%	45.69%	64.49%	50.74%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
1992-93		Asian	Black	Latino	Other	White
	ap	21.00%	27.51%	27.18%	15.18%	20.19%
	prin	26.00%	21.18%	27.57%	18.75%	27.85%
	teacher	53.00%	51.31%	45.25%	66.07%	51.96%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
1993-94		Asian	Black	Latino	Other	White
	ap	20.00%	27.42%	27.18%	16.39%	20.18%
	prin	27.78%	20.46%	27.72%	20.49%	27.86%
	teacher	52.22%	52.12%	45.09%	63.11%	51.96%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
1994-95		Asian	Black	Latino	Other	White
	ap	15.85%	28.16%	27.53%	20.00%	20.31%
	prin	31.71%	20.24%	26.75%	18.62%	27.17%
	teacher	52.44%	51.59%	45.72%	61.38%	52.52%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
1995-96		Asian	Black	Latino	Other	White
	ap	18.39%	29.60%	28.04%	17.14%	20.88%
	prin	28.74%	20.79%	27.29%	22.14%	27.01%
	teacher	52.87%	49.61%	44.67%	60.71%	52.11%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
1996-97		Asian	Black	Latino	Other	White
	ap	17.44%	30.21%	29.07%	17.27%	21.27%
	prin	27.91%	20.68%	26.82%	19.42%	27.27%
	teacher	54.65%	49.11%	44.11%	63.31%	51.46%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
1997-98		Asian	Black	Latino	Other	White
	ap	24.69%	31.97%	30.41%	21.57%	21.69%
	prin	24.69%	21.30%	26.68%	20.26%	27.34%
	teacher	50.62%	46.73%	42.91%	58.17%	50.97%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
1998-		Asian	Black	Latino	Other	White

99	ap	27.47%	32.98%	30.07%	21.89%	22.11%
	prin	19.78%	20.37%	25.75%	18.93%	27.26%
	teacher	52.75%	46.65%	44.19%	59.17%	50.64%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
1999-00		Asian	Black	Latino	Other	White
	ap	27.00%	32.70%	31.46%	24.43%	23.07%
	prin	17.00%	20.57%	26.14%	18.18%	27.24%
	teacher	56.00%	46.74%	42.40%	57.39%	49.69%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
2000-01		Asian	Black	Latino	Other	White
	ap	28.57%	34.15%	31.80%	25.82%	24.24%
	prin	15.24%	21.33%	26.23%	20.33%	27.77%
	teacher	56.19%	44.52%	41.97%	53.85%	47.99%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
2001-02		Asian	Black	Latino	Other	White
	ap	32.04%	33.56%	31.81%	25.87%	24.61%
	prin	18.45%	21.56%	25.98%	19.90%	27.18%
	teacher	49.51%	44.88%	42.21%	54.23%	48.21%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
2002-03		Asian	Black	Latino	Other	White
	ap	29.46%	34.16%	33.16%	27.03%	25.08%
	prin	20.54%	21.52%	25.37%	19.37%	26.81%
	teacher	50.00%	44.32%	41.46%	53.60%	48.11%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
2003-04		Asian	Black	Latino	Other	White
	ap	28.89%	33.47%	32.95%	27.62%	24.71%
	prin	14.81%	20.73%	25.03%	17.57%	26.50%
	teacher	56.30%	45.81%	42.03%	54.81%	48.80%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
2004-05		Asian	Black	Latino	Other	White
	ap	34.09%	33.82%	33.48%	27.72%	25.30%
	prin	13.64%	20.01%	24.80%	18.73%	26.83%
	teacher	52.27%	46.17%	41.72%	53.56%	47.88%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
2005-06		Asian	Black	Latino	Other	White
	ap	34.07%	33.68%	34.96%	30.77%	26.09%
	prin	16.30%	19.97%	24.82%	18.46%	26.75%
	teacher	49.63%	46.35%	40.22%	50.77%	47.16%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%

		Asian	Black	Latino	Other	White
2006-07	ap	31.17%	33.76%	35.78%	32.14%	26.75%
	prin	18.18%	19.57%	25.05%	17.50%	26.52%
	teacher	50.65%	46.67%	39.17%	50.36%	46.73%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
		Asian	Black	Latino	Other	White
2007-08	ap	27.33%	34.34%	36.73%	31.72%	27.62%
	prin	19.25%	19.23%	24.52%	20.00%	26.22%
	teacher	53.42%	46.43%	38.74%	48.28%	46.16%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
		Asian	Black	Latino	Other	White
2008-09	ap	30.86%	35.05%	35.67%	30.28%	27.16%
	prin	18.29%	18.50%	24.15%	21.14%	25.76%
	teacher	50.86%	46.44%	40.18%	48.58%	47.08%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
		Asian	Black	Latino	Other	White
2009-10	ap	27.32%	33.66%	34.96%	26.57%	26.36%
	prin	15.61%	18.15%	23.76%	21.79%	25.25%
	teacher	57.07%	48.20%	41.27%	51.64%	48.40%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%
		Asian	Black	Latino	Other	White
2010-11	ap	32.84%	34.87%	36.51%	25.07%	27.18%
	prin	16.42%	19.14%	24.97%	23.93%	25.92%
	teacher	50.75%	45.99%	38.52%	51.00%	46.90%
	Total	100.00%	100.00%	100.00%	100.00%	100.00%

Table A.5 – Cross Tabulations of Role with Gender

1991-92		Female	Male	Total
	ap	2,064	2,171	4,235
	prin	2,220	3,151	5,371
	teacher	6,119	3,655	9,774
	Total	10,403	8,977	19,380
1992-93		Female	Male	
	ap	2,200	2,178	4,378
	prin	2,361	3,007	5,368
	teacher	6,232	3,893	10,125
	Total	10,793	9,078	19,871
1993-94		Female	Male	
	ap	2,266	2,216	4,482
	prin	2,532	2,948	5,480
	teacher	6,454	3,906	10,360
	Total	11,252	9,070	20,322
1994-95		Female	Male	
	ap	2,425	2,256	4,681
	prin	2,654	2,853	5,507
	teacher	6,712	4,058	10,770
	Total	11,791	9,167	20,958
1995-96		Female	Male	
	ap	2,597	2,306	4,903
	prin	2,782	2,827	5,609
	teacher	6,791	4,010	10,801
	Total	12,170	9,143	21,313
1996-97		Female	Male	
	ap	2,767	2,355	5,122
	prin	2,934	2,799	5,733
	teacher	6,838	4,037	10,875
	Total	12,539	9,191	21,730
1997-98		Female	Male	
	ap	2,980	2,438	5,418
	prin	3,121	2,756	5,877
	teacher	6,820	4,097	10,917
	Total	12,921	9,291	22,212
1998-99		Female	Male	
	ap	3,183	2,537	5,720
	prin	3,258	2,756	6,014
	teacher	7,101	4,220	11,321
	Total	13,542	9,513	23,055
1999-		Female	Male	

00	ap	3,354	2,678	6,032
	prin	3,342	2,775	6,117
	teacher	7,136	4,128	11,264
	Total	13,832	9,581	23,413
2000-01		Female	Male	
	ap	3,604	2,722	6,326
	prin	3,473	2,780	6,253
	teacher	6,961	3,989	10,950
	Total	14,038	9,491	23,529
2001-02		Female	Male	
	ap	3,786	2,765	6,551
	prin	3,577	2,740	6,317
	teacher	7,162	4,126	11,288
	Total	14,525	9,631	24,156
2002-03		Female	Male	
	ap	4,007	2,841	6,848
	prin	3,697	2,650	6,347
	teacher	7,283	4,152	11,435
	Total	14,987	9,643	24,630
2003-04		Female	Male	
	ap	4,117	2,866	6,983
	prin	3,794	2,642	6,436
	teacher	7,694	4,305	11,999
	Total	15,605	9,813	25,418
2004-05		Female	Male	
	ap	4,383	2,922	7,305
	prin	3,892	2,691	6,583
	teacher	7,832	4,242	12,074
	Total	16,107	9,855	25,962
2005-06		Female	Male	
	ap	4,609	3,002	7,611
	prin	3,996	2,653	6,649
	teacher	7,876	4,132	12,008
	Total	16,481	9,787	26,268
2006-07		Female	Male	
	ap	4,934	3,080	8,014
	prin	4,104	2,687	6,791
	teacher	8,089	4,139	12,228
	Total	17,127	9,906	27,033
2007-08		Female	Male	
	ap	5,279	3,193	8,472
	prin	4,220	2,663	6,883
	teacher	8,257	4,162	12,419

	Total	17,756	10,018	27,774
2008-09		Female	Male	
	ap	5,496	3,211	8,707
	prin	4,382	2,641	7,023
	teacher	8,859	4,314	13,173
	Total	18,737	10,166	28,903
2009-10		Female	Male	
	ap	5,583	3,235	8,818
	prin	4,537	2,647	7,184
	teacher	9,633	4,536	14,169
	Total	19,753	10,418	30,171
2010-11		Female	Male	
	ap	5,607	3,299	8,906
	prin	4,604	2,660	7,264
	teacher	9,095	4,175	13,270
	Total	19,306	10,134	29,440

Table A.6 – Frequencies of Role across Gender

1991-92		Female	Male
	ap	48.74%	51.26%
	prin	41.33%	58.67%
	teacher	62.60%	37.40%
	Total	53.68%	46.32%
1992-93		Female	Male
	ap	50.25%	49.75%
	prin	43.98%	56.02%
	teacher	61.55%	38.45%
	Total	54.32%	45.68%
1993-94		Female	Male
	ap	50.56%	49.44%
	prin	46.20%	53.80%
	teacher	62.30%	37.70%
	Total	55.37%	44.63%
1994-95		Female	Male
	ap	51.81%	48.19%
	prin	48.19%	51.81%
	teacher	62.32%	37.68%
	Total	56.26%	43.74%
1995-96		Female	Male
	ap	52.97%	47.03%
	prin	49.60%	50.40%
	teacher	62.87%	37.13%
	Total	57.10%	42.90%
1996-97		Female	Male
	ap	54.02%	45.98%
	prin	51.18%	48.82%
	teacher	62.88%	37.12%
	Total	57.70%	42.30%
1997-98		Female	Male
	ap	55.00%	45.00%
	prin	53.11%	46.89%
	teacher	62.47%	37.53%
	Total	58.17%	41.83%
1998-99		Female	Male
	ap	55.65%	44.35%
	prin	54.17%	45.83%
	teacher	62.72%	37.28%
	Total	58.74%	41.26%
1999-		Female	Male

00	ap	55.60%	44.40%
	prin	54.63%	45.37%
	teacher	63.35%	36.65%
	Total	59.08%	40.92%
2000-01		Female	Male
	ap	56.97%	43.03%
	prin	55.54%	44.46%
	teacher	63.57%	36.43%
	Total	59.66%	40.34%
2001-02		Female	Male
	ap	57.79%	42.21%
	prin	56.62%	43.38%
	teacher	63.45%	36.55%
	Total	60.13%	39.87%
2002-03		Female	Male
	ap	58.51%	41.49%
	prin	58.25%	41.75%
	teacher	63.69%	36.31%
	Total	60.85%	39.15%
2003-04		Female	Male
	ap	58.96%	41.04%
	prin	58.95%	41.05%
	teacher	64.12%	35.88%
	Total	61.39%	38.61%
2004-05		Female	Male
	ap	60.00%	40.00%
	prin	59.12%	40.88%
	teacher	64.87%	35.13%
	Total	62.04%	37.96%
2005-06		Female	Male
	ap	60.56%	39.44%
	prin	60.10%	39.90%
	teacher	65.59%	34.41%
	Total	62.74%	37.26%
2006-07		Female	Male
	ap	61.57%	38.43%
	prin	60.43%	39.57%
	teacher	66.15%	33.85%
	Total	63.36%	36.64%
2007-08		Female	Male
	ap	62.31%	37.69%
	prin	61.31%	38.69%
	teacher	66.49%	33.51%

	Total	63.93%	36.07%
2008-09		Female	Male
	ap	63.12%	36.88%
	prin	62.39%	37.61%
	teacher	67.25%	32.75%
	Total	64.83%	35.17%
2009-10		Female	Male
	ap	63.31%	36.69%
	prin	63.15%	36.85%
	teacher	67.99%	32.01%
	Total	65.47%	34.53%
2010-11		Female	Male
	ap	62.96%	37.04%
	prin	63.38%	36.62%
	teacher	68.54%	31.46%
	Total	65.58%	34.42%

Table A.7 – Frequencies of Role within Gender

1991-92		Female	Male
	ap	19.84%	24.18%
	prin	21.34%	35.10%
	teacher	58.82%	40.72%
	Total	100.00%	100.00%
1992-93		Female	Male
	ap	20.38%	23.99%
	prin	21.88%	33.12%
	teacher	57.74%	42.88%
	Total	100.00%	100.00%
1993-94		Female	Male
	ap	20.14%	24.43%
	prin	22.50%	32.50%
	teacher	57.36%	43.07%
	Total	100.00%	100.00%
1994-95		Female	Male
	ap	20.57%	24.61%
	prin	22.51%	31.12%
	teacher	56.92%	44.27%
	Total	100.00%	100.00%
1995-96		Female	Male
	ap	21.34%	25.22%
	prin	22.86%	30.92%
	teacher	55.80%	43.86%
	Total	100.00%	100.00%
1996-97		Female	Male
	ap	22.07%	25.62%
	prin	23.40%	30.45%
	teacher	54.53%	43.92%
	Total	100.00%	100.00%
1997-98		Female	Male
	ap	23.06%	26.24%
	prin	24.15%	29.66%
	teacher	52.78%	44.10%
	Total	100.00%	100.00%
1998-99		Female	Male
	ap	23.50%	26.67%
	prin	24.06%	28.97%
	teacher	52.44%	44.36%
	Total	100.00%	100.00%
1999-		Female	Male

00	ap	24.25%	27.95%
	prin	24.16%	28.96%
	teacher	51.59%	43.09%
	Total	100.00%	100.00%
2000-01		Female	Male
	ap	25.67%	28.68%
	prin	24.74%	29.29%
	teacher	49.59%	42.03%
	Total	100.00%	100.00%
2001-02		Female	Male
	ap	26.07%	28.71%
	prin	24.63%	28.45%
	teacher	49.31%	42.84%
	Total	100.00%	100.00%
2002-03		Female	Male
	ap	26.74%	29.46%
	prin	24.67%	27.48%
	teacher	48.60%	43.06%
	Total	100.00%	100.00%
2003-04		Female	Male
	ap	26.38%	29.21%
	prin	24.31%	26.92%
	teacher	49.30%	43.87%
	Total	100.00%	100.00%
2004-05		Female	Male
	ap	27.21%	29.65%
	prin	24.16%	27.31%
	teacher	48.62%	43.04%
	Total	100.00%	100.00%
2005-06		Female	Male
	ap	27.97%	30.67%
	prin	24.25%	27.11%
	teacher	47.79%	42.22%
	Total	100.00%	100.00%
2006-07		Female	Male
	ap	28.81%	31.09%
	prin	23.96%	27.12%
	teacher	47.23%	41.78%
	Total	100.00%	100.00%
2007-08		Female	Male
	ap	29.73%	31.87%
	prin	23.77%	26.58%
	teacher	46.50%	41.55%

	Total	100.00%	100.00%
2008-09		Female	Male
	ap	29.33%	31.59%
	prin	23.39%	25.98%
	teacher	47.28%	42.44%
	Total	100.00%	100.00%
2009-10		Female	Male
	ap	28.26%	31.05%
	prin	22.97%	25.41%
	teacher	48.77%	43.54%
	Total	100.00%	100.00%
2010-11		Female	Male
	ap	29.04%	32.55%
	prin	23.85%	26.25%
	teacher	47.11%	41.20%
	Total	100.00%	100.00%

Table A.8 – Multinomial Logistic Regression Results

1991-1992

statewide:

```
.char ethnicity[omit] "White"
. mlogit admin  Asian Black Latino Other AsianMale BlackMale LatinoMale OtherMale male
age  tenure if validcert1992a==1, rrr

Iteration 0:   log likelihood = -19846.197
Iteration 1:   log likelihood = -19163.245
Iteration 2:   log likelihood = -19157.563
Iteration 3:   log likelihood = -19157.553
Iteration 4:   log likelihood = -19157.553

Multinomial logistic regression                 Number of obs   =      19256
                                                LR chi2(22)     =    1377.29
                                                Prob > chi2     =     0.0000
Log likelihood = -19157.553                     Pseudo R2       =     0.0347

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |    .436495   .2342884    -1.54   0.122     .1524395    1.249859
       Black |   .8892755   .0699332    -1.49   0.136     .7622497     1.03747
      Latino |   1.121119    .081466     1.57   0.116     .9722974    1.292719
       Other |   .7036409    .277988    -0.89   0.374      .324389    1.526286
   AsianMale |   2.848278   1.787461     1.67   0.095     .8325371    9.744538
   BlackMale |   1.816439    .216406     5.01   0.000     1.438172    2.294198
  LatinoMale |   1.423529   .1463641     3.43   0.001     1.163718    1.741346
   OtherMale |   1.293968   .6524932     0.51   0.609     .4816139    3.476549
        male |   1.583787   .0712147    10.23   0.000     1.450183    1.729701
```

```
         age |   .9702733   .0025921   -11.30   0.000     .9652061    .9753672
      tenure |   1.013886   .0026226     5.33   0.000     1.008758    1.019039
-------------+------------------------------------------------------------------
3            |
       Asian |   .7854809   .2962774    -0.64   0.522     .3750325    1.645138
       Black |   .7374034   .0586339    -3.83   0.000     .6309903    .8617626
      Latino |   1.261752   .0882057     3.33   0.001     1.100193    1.447036
       Other |   .3251662    .172459    -2.12   0.034     .1149879    .9195147
   AsianMale |   .6710508   .3248825    -0.82   0.410     .2598093     1.73323
   BlackMale |   .8493148   .1053615    -1.32   0.188     .6659984    1.083089
  LatinoMale |   .7089476   .0707435    -3.45   0.001     .5830095    .8620901
   OtherMale |   1.173456   .7461802     0.25   0.801     .3374444    4.080666
        male |   2.487052   .1016105    22.30   0.000     2.295664    2.694396
         age |   1.008648   .0024744     3.51   0.000      1.00381     1.01351
      tenure |   1.032329   .0023519    13.97   0.000     1.027729    1.036949
------------------------------------------------------------------------------

. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=19256)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
       Asian |      2.976    2    0.226
       Black |     15.545    2    0.000
      Latino |     11.345    2    0.003
       Other |      6.146    2    0.046
   AsianMale |      4.841    2    0.089
   BlackMale |     35.064    2    0.000
  LatinoMale |     37.140    2    0.000
   OtherMale |      0.291    2    0.865
        male |    520.489    2    0.000
         age |    187.599    2    0.000
      tenure |    198.947    2    0.000
---------------------------------------

**** Wald tests for independent variables (N=19256)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
       Asian |      2.529    2    0.282
       Black |     15.079    2    0.001
      Latino |     11.488    2    0.003
       Other |      4.856    2    0.088
   AsianMale |      4.365    2    0.113
   BlackMale |     35.038    2    0.000
  LatinoMale |     37.101    2    0.000
   OtherMale |      0.287    2    0.866
        male |    507.613    2    0.000
         age |    181.795    2    0.000
      tenure |    195.543    2    0.000
---------------------------------------

**** Hausman tests of IIA assumption (N=19256)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+----------------------------------
       2 |    -4.853   12     ---     ---
       3 |    -4.526   12     ---     ---
-----------------------------------------------
 Note: If chi2<0, the estimated model does not
```

```
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=19256)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+--------------------------------------------------------
       2 |  -4643.560  -4635.675  15.770   12    0.202   for Ho
       3 |  -4177.240  -4166.958  20.564   12    0.057   for Ho
-------------------------------------------------------------------

**** Wald tests for combining alternatives (N=19256)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  |  525.973   11    0.000
       2-       1  |  426.013   11    0.000
       3-       1  |  937.167   11    0.000
-----------------------------------------

**** LR tests for combining alternatives (N=19256)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  |  553.936   11    0.000
       2-       1  |  435.608   11    0.000
       3-       1  |  995.647   11    0.000
-----------------------------------------
by region

. bysort region: mlogit admin  Asian Black Latino Other AsianMale BlackMale LatinoMale
OtherMale male age  tenure if validcert1992a==1, rrr


---------->  region = 1

Iteration 0:   log likelihood = -1272.2522
Iteration 1:   log likelihood = -1197.3667
Iteration 2:   log likelihood =  -1196.279
Iteration 3:   log likelihood = -1196.0796
Iteration 4:   log likelihood = -1196.0357
Iteration 5:   log likelihood =  -1196.025
Iteration 6:   log likelihood = -1196.0228
Iteration 7:   log likelihood = -1196.0223
Iteration 8:   log likelihood = -1196.0222
Iteration 9:   log likelihood = -1196.0222

Multinomial logistic regression                 Number of obs   =       1204
                                                LR chi2(22)     =     152.46
                                                Prob > chi2     =     0.0000
Log likelihood = -1196.0222                     Pseudo R2       =     0.0599

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   2.30e-06   .0035335    -0.01   0.993            0           .
       Black |   1.49e+07   1.94e+10     0.01   0.990            0           .
```

```
      Latino |   1.160508   .3002624     0.58   0.565     .6988982    1.927004
       Other |   1.13e-06   .0017356    -0.01   0.993            0           .
   AsianMale |    .420467   913.1905    -0.00   1.000            0           .
   BlackMale |   5.38e-14   8.50e-11    -0.02   0.985            0           .
  LatinoMale |   1.293741   .4615135     0.72   0.470     .6429836    2.603123
   OtherMale |    3036197   4.66e+09     0.01   0.992            0           .
        male |   1.810739   .5744831     1.87   0.061     .9722991    3.372189
         age |   .9463085   .0105224    -4.96   0.000      .925908    .9671585
      tenure |     1.0465   .0109257     4.35   0.000     1.025303    1.068134
-------------+----------------------------------------------------------------
3            |
       Asian |   6.55e-07   .0010187    -0.01   0.993            0           .
       Black |   2.688707   5885.819     0.00   1.000            0           .
      Latino |   1.033817   .2500918     0.14   0.891     .6434699    1.660958
       Other |   8.75e-07   .0013614    -0.01   0.993            0           .
   AsianMale |   2.003039   4405.541     0.00   1.000            0           .
   BlackMale |   4.86e-07   .0011451    -0.01   0.995            0           .
  LatinoMale |   1.830772   .6539185     1.69   0.090     .9090764    3.686956
   OtherMale |    4054772   6.31e+09     0.01   0.992            0           .
        male |    1.02766   .3242769     0.09   0.931     .5536735    1.907414
         age |   .9964188   .0109201    -0.33   0.743      .975244    1.018053
      tenure |    1.07272   .0107132     7.03   0.000     1.051927    1.093925
------------------------------------------------------------------------------


---------->  region = 2

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -807.17651
Iteration 1:   log likelihood = -776.30991
Iteration 2:   log likelihood =  -775.4422
Iteration 3:   log likelihood = -774.73356
Iteration 4:   log likelihood = -774.69385
Iteration 5:   log likelihood = -774.68682
Iteration 6:   log likelihood = -774.68528
Iteration 7:   log likelihood = -774.68489
Iteration 8:   log likelihood = -774.68482
Iteration 9:   log likelihood =  -774.6848

Multinomial logistic regression                 Number of obs   =        859
                                                LR chi2(18)     =      64.98
                                                Prob > chi2     =     0.0000
Log likelihood =  -774.6848                     Pseudo R2       =     0.0403

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |    .802959   .6344426    -0.28   0.781     .1706604     3.77793
      Latino |    .824396   .2296929    -0.69   0.488     .4775012    1.423303
       Other |   9.386849   11.74794     1.79   0.074     .8076337    109.1001
   AsianMale |  (omitted)
   BlackMale |   3.667959   3.960567     1.20   0.229     .4418951    30.44597
  LatinoMale |   1.438581   .5778246     0.91   0.365     .6546935    3.161043
   OtherMale |   6.70e-08   .0000866    -0.01   0.990            0           .
        male |   1.490137   .4068584     1.46   0.144     .8726075    2.544681
         age |    .997017     .01448    -0.21   0.837     .9690368    1.025805
      tenure |   1.012715   .0142249     0.90   0.368      .985215    1.040983
-------------+----------------------------------------------------------------
3            |
       Asian |  (omitted)
       Black |   1.181563    .805765     0.24   0.807     .3104425    4.497099
      Latino |    1.22284   .3143387     0.78   0.434     .7388614    2.023841
```

```
       Other |   8.86e-07   .0025963    -0.00   0.996           0           .
   AsianMale |  (omitted)
   BlackMale |   .9475953   .9844905    -0.05   0.959     .1236742      7.2605
  LatinoMale |   .8521235   .2982462    -0.46   0.648     .4291202      1.6921
   OtherMale |   .6492682   2024.537    -0.00   1.000           0           .
        male |   2.726019   .6603589     4.14   0.000     1.695631    4.382545
         age |   1.026795   .0129496     2.10   0.036     1.001725    1.052492
      tenure |   1.019138   .0120045     1.61   0.108     .9958789     1.04294
------------------------------------------------------------------------------


---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -332.76844
Iteration 1:   log likelihood = -313.27778
Iteration 2:   log likelihood = -312.90432
Iteration 3:   log likelihood = -312.87462
Iteration 4:   log likelihood =  -312.8688
Iteration 5:   log likelihood = -312.86757
Iteration 6:   log likelihood =  -312.8673
Iteration 7:   log likelihood = -312.86723
Iteration 8:   log likelihood = -312.86721

Multinomial logistic regression                 Number of obs   =        324
                                                LR chi2(16)     =      39.80
                                                Prob > chi2     =     0.0008
Log likelihood = -312.86721                     Pseudo R2       =     0.0598

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   2.086675   1.920844     0.80   0.424     .3434786    12.67681
      Latino |   4.061465   3.501274     1.63   0.104     .7496974    22.00288
       Other |   .6749088   975.6196    -0.00   1.000           0           .
   AsianMale |  (omitted)
   BlackMale |   2.192741   3.796546     0.45   0.650     .0736553     65.2786
  LatinoMale |   .5226977   .6224857    -0.54   0.586     .0506461    5.394544
   OtherMale |  (omitted)
        male |   1.371477   .4928605     0.88   0.379     .6781049    2.773834
         age |   1.007603   .0273987     0.28   0.781      .955308     1.06276
      tenure |   .9485571   .0215394    -2.33   0.020     .9072664     .991727
-------------+----------------------------------------------------------------
3            |
       Asian |  (omitted)
       Black |   1.341573   1.206458     0.33   0.744     .2302187    7.817863
      Latino |   1.576494   1.480531     0.48   0.628     .2502096       9.933
       Other |   489194.8   3.71e+08     0.02   0.986           0           .
   AsianMale |  (omitted)
   BlackMale |   1.078057   1.658747     0.05   0.961     .0528379    21.99573
  LatinoMale |   1.295427   1.464282     0.23   0.819     .1413382    11.87316
   OtherMale |  (omitted)
        male |   3.152539   .8888116     4.07   0.000     1.814165    5.478279
         age |   1.030995   .0225647     1.39   0.163     .9877044    1.076183
      tenure |   .9876306   .0161855    -0.76   0.448     .9564116    1.019869
------------------------------------------------------------------------------


---------->  region = 4

--Break--
```

```
r(1);

. bysort region: mlogit admin  Asian Black Latino Other AsianMale BlackMale LatinoMale
OtherMale male age  tenure if validcert1992a==1, rrr iter(20)


--------->  region = 1

Iteration 0:   log likelihood = -1272.2522
Iteration 1:   log likelihood = -1197.3667
Iteration 2:   log likelihood =  -1196.279
Iteration 3:   log likelihood = -1196.0796
Iteration 4:   log likelihood = -1196.0357
Iteration 5:   log likelihood =  -1196.025
Iteration 6:   log likelihood = -1196.0228
Iteration 7:   log likelihood = -1196.0223
Iteration 8:   log likelihood = -1196.0222
Iteration 9:   log likelihood = -1196.0222

Multinomial logistic regression                 Number of obs   =       1204
                                                LR chi2(22)     =     152.46
                                                Prob > chi2     =     0.0000
Log likelihood = -1196.0222                     Pseudo R2       =     0.0599

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   2.30e-06   .0035335    -0.01   0.993            0           .
       Black |   1.49e+07   1.94e+10     0.01   0.990            0           .
      Latino |   1.160508   .3002624     0.58   0.565     .6988982    1.927004
       Other |   1.13e-06   .0017356    -0.01   0.993            0           .
   AsianMale |    .420467   913.1905    -0.00   1.000            0           .
   BlackMale |   5.38e-14   8.50e-11    -0.02   0.985            0           .
  LatinoMale |   1.293741   .4615135     0.72   0.470     .6429836    2.603123
   OtherMale |    3036197   4.66e+09     0.01   0.992            0           .
        male |   1.810739   .5744831     1.87   0.061     .9722991    3.372189
         age |   .9463085   .0105224    -4.96   0.000      .925908    .9671585
      tenure |     1.0465   .0109257     4.35   0.000     1.025303    1.068134
-------------+----------------------------------------------------------------
3            |
       Asian |   6.55e-07   .0010187    -0.01   0.993            0           .
       Black |   2.688707   5885.819     0.00   1.000            0           .
      Latino |   1.033817   .2500918     0.14   0.891     .6434699    1.660958
       Other |   8.75e-07   .0013614    -0.01   0.993            0           .
   AsianMale |   2.003039   4405.541     0.00   1.000            0           .
   BlackMale |   4.86e-07   .0011451    -0.01   0.995            0           .
  LatinoMale |   1.830772   .6539185     1.69   0.090     .9090764    3.686956
   OtherMale |    4054772   6.31e+09     0.01   0.992            0           .
        male |    1.02766   .3242769     0.09   0.931     .5536735    1.907414
         age |   .9964188   .0109201    -0.33   0.743      .975244    1.018053
      tenure |    1.07272   .0107132     7.03   0.000     1.051927    1.093925
------------------------------------------------------------------------------


--------->  region = 2

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -807.17651
Iteration 1:   log likelihood = -776.30991
Iteration 2:   log likelihood =  -775.4422
Iteration 3:   log likelihood = -774.73356
Iteration 4:   log likelihood = -774.69385
Iteration 5:   log likelihood = -774.68682
```

```
Iteration 6:   log likelihood = -774.68528
Iteration 7:   log likelihood = -774.68489
Iteration 8:   log likelihood = -774.68482
Iteration 9:   log likelihood =  -774.6848

Multinomial logistic regression                 Number of obs   =        859
                                                LR chi2(18)     =      64.98
                                                Prob > chi2     =     0.0000
Log likelihood =  -774.6848                     Pseudo R2       =     0.0403

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |    .802959   .6344426    -0.28   0.781     .1706604     3.77793
      Latino |    .824396   .2296929    -0.69   0.488     .4775012    1.423303
       Other |   9.386849   11.74794     1.79   0.074     .8076337    109.1001
   AsianMale |  (omitted)
   BlackMale |   3.667959   3.960567     1.20   0.229     .4418951    30.44597
  LatinoMale |   1.438581   .5778246     0.91   0.365     .6546935    3.161043
   OtherMale |   6.70e-08   .0000866    -0.01   0.990            0           .
        male |   1.490137   .4068584     1.46   0.144     .8726075    2.544681
         age |    .997017     .01448    -0.21   0.837     .9690368    1.025805
      tenure |   1.012715   .0142249     0.90   0.368      .985215    1.040983
-------------+----------------------------------------------------------------
3            |
       Asian |  (omitted)
       Black |   1.181563    .805765     0.24   0.807     .3104425    4.497099
      Latino |    1.22284   .3143387     0.78   0.434     .7388614    2.023841
       Other |   8.86e-07   .0025963    -0.00   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   .9475953   .9844905    -0.05   0.959     .1236742      7.2605
  LatinoMale |   .8521235   .2982462    -0.46   0.648     .4291202      1.6921
   OtherMale |   .6492682   2024.537    -0.00   1.000            0           .
        male |   2.726019   .6603589     4.14   0.000     1.695631    4.382545
         age |   1.026795   .0129496     2.10   0.036     1.001725    1.052492
      tenure |   1.019138   .0120045     1.61   0.108     .9958789     1.04294
------------------------------------------------------------------------------


---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -332.76844
Iteration 1:   log likelihood = -313.27778
Iteration 2:   log likelihood = -312.90432
Iteration 3:   log likelihood = -312.87462
Iteration 4:   log likelihood =  -312.8688
Iteration 5:   log likelihood = -312.86757
Iteration 6:   log likelihood =  -312.8673
Iteration 7:   log likelihood = -312.86723
Iteration 8:   log likelihood = -312.86721

Multinomial logistic regression                 Number of obs   =        324
                                                LR chi2(16)     =      39.80
                                                Prob > chi2     =     0.0008
Log likelihood = -312.86721                     Pseudo R2       =     0.0598

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
```

```
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   2.086675   1.920844     0.80   0.424     .3434786    12.67681
      Latino |   4.061465   3.501274     1.63   0.104     .7496974    22.00288
       Other |   .6749088   975.6196    -0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   2.192741   3.796546     0.45   0.650     .0736553     65.2786
  LatinoMale |   .5226977   .6224857    -0.54   0.586     .0506461    5.394544
   OtherMale |  (omitted)
        male |   1.371477   .4928605     0.88   0.379     .6781049    2.773834
         age |   1.007603   .0273987     0.28   0.781      .955308     1.06276
      tenure |   .9485571   .0215394    -2.33   0.020     .9072664     .991727
-------------+----------------------------------------------------------------
3            |
       Asian |  (omitted)
       Black |   1.341573   1.206458     0.33   0.744     .2302187    7.817863
      Latino |   1.576494   1.480531     0.48   0.628     .2502096       9.933
       Other |   489194.8   3.71e+08     0.02   0.986            0           .
   AsianMale |  (omitted)
   BlackMale |   1.078057   1.658747     0.05   0.961     .0528379    21.99573
  LatinoMale |   1.295427   1.464282     0.23   0.819     .1413382    11.87316
   OtherMale |  (omitted)
        male |   3.152539   .8888116     4.07   0.000     1.814165    5.478279
         age |   1.030995   .0225647     1.39   0.163     .9877044    1.076183
      tenure |   .9876306   .0161855    -0.76   0.448     .9564116    1.019869
------------------------------------------------------------------------------


--------->  region = 4

Iteration 0:   log likelihood = -3949.4578
Iteration 1:   log likelihood = -3734.3365
Iteration 2:   log likelihood = -3728.6781
Iteration 3:   log likelihood = -3728.4779
Iteration 4:   log likelihood = -3728.4301
Iteration 5:   log likelihood = -3728.4204
Iteration 6:   log likelihood = -3728.4183
Iteration 7:   log likelihood = -3728.4178
Iteration 8:   log likelihood = -3728.4177
Iteration 9:   log likelihood = -3728.4177

Multinomial logistic regression                 Number of obs   =       3879
                                                LR chi2(22)     =     442.08
                                                Prob > chi2     =     0.0000
Log likelihood = -3728.4177                     Pseudo R2       =     0.0560

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   .6301313    .518843    -0.56   0.575     .1254762    3.164468
       Black |   .4585693   .0572969    -6.24   0.000     .3589632    .5858145
      Latino |   1.252405   .2526741     1.12   0.265     .8433623    1.859841
       Other |    .448598   .5048009    -0.71   0.476     .0494325    4.071009
   AsianMale |   1.76e-06   .0008751    -0.03   0.979            0           .
   BlackMale |   2.333515   .4650226     4.25   0.000     1.579004    3.448561
  LatinoMale |   1.571271   .5143033     1.38   0.167     .8272532    2.984445
   OtherMale |      .6031   .9387153    -0.32   0.745     .0285436    12.74297
        male |   1.134321   .1052808     1.36   0.174     .9456546    1.360628
         age |   .9623738   .0053713    -6.87   0.000     .9519037    .9729591
      tenure |   1.024146   .0058763     4.16   0.000     1.012693    1.035728
-------------+----------------------------------------------------------------
3            |
       Asian |   .6414229   .6971422    -0.41   0.683      .076208    5.398689
```

```
       Black |   .3122562   .0472305    -7.70   0.000     .2321466    .4200103
      Latino |   2.094742   .4417456     3.51   0.000     1.385564    3.166901
       Other |   .9977482   1.136988    -0.00   0.998     .1069131    9.311318
   AsianMale |   .3935521   .6083872    -0.60   0.546     .0190169    8.144492
   BlackMale |   2.070428   .4835849     3.12   0.002     1.309927    3.272452
  LatinoMale |   .8666393   .3136247    -0.40   0.692     .4263834    1.761475
   OtherMale |   .5939355    .840025    -0.37   0.713      .037141    9.497849
        male |   1.323702   .1386444     2.68   0.007     1.078042    1.625343
         age |   .9961917   .0064954    -0.59   0.558     .9835419    1.009004
      tenure |   1.087037    .006909    13.13   0.000      1.07358    1.100663
------------------------------------------------------------------------------


--------->  region = 5

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -568.03994
Iteration 1:   log likelihood = -507.29957
Iteration 2:   log likelihood = -505.12232
Iteration 3:   log likelihood = -504.85699
Iteration 4:   log likelihood = -504.82732
Iteration 5:   log likelihood = -504.82303
Iteration 6:   log likelihood = -504.82227
Iteration 7:   log likelihood =  -504.8221
Iteration 8:   log likelihood = -504.82206
Iteration 9:   log likelihood = -504.82205

Multinomial logistic regression                 Number of obs   =        619
                                                LR chi2(18)     =     126.44
                                                Prob > chi2     =     0.0000
Log likelihood = -504.82205                     Pseudo R2       =     0.1113

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   2.178729   .9202306     1.84   0.065     .9520962    4.985693
      Latino |   4.362391   5.288306     1.22   0.224     .4053741    46.94541
       Other |   6.82e-07    .002535    -0.00   0.997            0           .
   AsianMale |  (omitted)
   BlackMale |   .5086219   .2909236    -1.18   0.237     .1657759    1.560518
  LatinoMale |   2.43e-08   .0000516    -0.01   0.993            0           .
   OtherMale |   .1251797   570.1363    -0.00   1.000            0           .
        male |   6.838185   2.084887     6.31   0.000     3.762001    12.42976
         age |   .9444582   .0169087    -3.19   0.001     .9118925    .9781869
      tenure |   1.042065   .0172314     2.49   0.013     1.008834    1.076391
-------------+----------------------------------------------------------------
3            |
       Asian |  (omitted)
       Black |   1.456785   .5897255     0.93   0.353     .6588977    3.220868
      Latino |   1.74e-06   .0025945    -0.01   0.993            0           .
       Other |   4.33e-07   .0014017    -0.00   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   .4868219   .2701436    -1.30   0.195     .1640694    1.444483
  LatinoMale |    .054924   129.9643    -0.00   0.999            0           .
   OtherMale |   .3013888   1188.032    -0.00   1.000            0           .
        male |   5.719688   1.448552     6.89   0.000     3.481765    9.396048
         age |   1.010088    .014914     0.68   0.497     .9812763    1.039746
      tenure |   1.034915   .0140007     2.54   0.011     1.007835    1.062723
------------------------------------------------------------------------------


--------->  region = 6
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -659.93438
Iteration 1:   log likelihood = -630.59529
Iteration 2:   log likelihood = -629.64267
Iteration 3:   log likelihood = -629.45648
Iteration 4:   log likelihood = -629.41521
Iteration 5:   log likelihood = -629.40504
Iteration 6:   log likelihood =   -629.403
Iteration 7:   log likelihood = -629.40257
Iteration 8:   log likelihood = -629.40247
Iteration 9:   log likelihood = -629.40244

Multinomial logistic regression                 Number of obs   =        622
                                                LR chi2(20)     =      61.06
                                                Prob > chi2     =     0.0000
Log likelihood = -629.40244                     Pseudo R2       =     0.0463

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   6.62e-07   .0011051    -0.01   0.993           0           .
       Black |    .431744    .280928    -1.29   0.197     .1206049    1.545566
      Latino |   1.876913   2.672978     0.44   0.658     .1151377    30.59642
       Other |   1.64e-06    .002743    -0.01   0.994           0           .
   AsianMale |  (omitted)
   BlackMale |   9.887005   9.487537     2.39   0.017     1.507491    64.84476
  LatinoMale |   7.40e-07   .0005575    -0.02   0.985           0           .
   OtherMale |   1.101393   2115.555     0.00   1.000           0           .
        male |   1.622099   .3577269     2.19   0.028     1.052832     2.49917
         age |   .9661609    .014195    -2.34   0.019     .9387359    .9943871
      tenure |   1.002821   .0139574     0.20   0.840     .9758343    1.030553
-------------+----------------------------------------------------------------
3            |
       Asian |   1.19e-06   .0017371    -0.01   0.993           0           .
       Black |   .3255155   .2497204    -1.46   0.143     .0723718    1.464111
      Latino |   2.98e-06   .0027442    -0.01   0.989           0           .
       Other |   1.01e-06   .0014666    -0.01   0.992           0           .
   AsianMale |  (omitted)
   BlackMale |   5.794391   6.052515     1.68   0.093      .747976    44.88776
  LatinoMale |   136011.7   1.25e+08     0.01   0.990           0           .
   OtherMale |   809885.7   1.18e+09     0.01   0.993           0           .
        male |   2.885804   .5838956     5.24   0.000     1.941065    4.290359
         age |   1.006556   .0130778     0.50   0.615     .9812479    1.032517
      tenure |   1.000131   .0121843     0.01   0.991     .9765335      1.0243
------------------------------------------------------------------------------


--------->  region = 7

Iteration 0:   log likelihood = -965.44535
Iteration 1:   log likelihood = -900.16614
Iteration 2:   log likelihood = -895.07265
Iteration 3:   log likelihood = -894.85025
Iteration 4:   log likelihood = -894.79708
Iteration 5:   log likelihood =  -894.7848
Iteration 6:   log likelihood = -894.78174
Iteration 7:   log likelihood = -894.78115
Iteration 8:   log likelihood = -894.78105
Iteration 9:   log likelihood = -894.78103

Multinomial logistic regression                 Number of obs   =       1009
                                                LR chi2(22)     =     141.33
                                                Prob > chi2     =     0.0000
```

```
Log likelihood = -894.78103                     Pseudo R2       =     0.0732

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   5.47e+08   4.27e+12     0.00   0.998            0           .
       Black |   .9766125   .4976903    -0.05   0.963     .3597017    2.651564
      Latino |   3.47e-06   .0026285    -0.02   0.987            0           .
       Other |   2.71e-06   .0056986    -0.01   0.995            0           .
   AsianMale |    .008687   68.68999    -0.00   1.000            0           .
   BlackMale |   2.315818   1.398344     1.39   0.164      .709136    7.562745
  LatinoMale |   .2632608   337.0248    -0.00   0.999            0           .
   OtherMale |   8.21e+13   6.64e+17     0.00   0.997            0           .
        male |   4.165261    .986823     6.02   0.000     2.618049    6.626843
         age |   .9732385   .0140495    -1.88   0.060      .946088    1.001168
      tenure |    1.02511   .0142566     1.78   0.075     .9975448    1.053437
-------------+----------------------------------------------------------------
3            |
       Asian |    .875689   11478.68    -0.00   1.000            0           .
       Black |   .9089616   .2951558    -0.29   0.769     .4810004    1.717693
      Latino |   .7590419    .839932    -0.25   0.803     .0867666    6.640162
       Other |   1.82e-06   .0025227    -0.01   0.992            0           .
   AsianMale |    1185630   1.56e+10     0.00   0.999            0           .
   BlackMale |   .6245453   .2971986    -0.99   0.323      .245758    1.587158
  LatinoMale |   .6496004   1.077373    -0.26   0.795     .0251718    16.76402
   OtherMale |   308142.7   4.06e+09     0.00   0.999            0           .
        male |   3.337378   .5366886     7.49   0.000     2.435131    4.573918
         age |   1.015709   .0106295     1.49   0.136     .9950874    1.036757
      tenure |   1.021326   .0100613     2.14   0.032     1.001795    1.041237
------------------------------------------------------------------------------


--------->  region = 8

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -288.99157
Iteration 1:   log likelihood = -260.23858
Iteration 2:   log likelihood = -255.59635
Iteration 3:   log likelihood = -254.98773
Iteration 4:   log likelihood =  -254.9271
Iteration 5:   log likelihood = -254.91441
Iteration 6:   log likelihood = -254.91153
Iteration 7:   log likelihood = -254.91082
Iteration 8:   log likelihood = -254.91068
Iteration 9:   log likelihood = -254.91066

Multinomial logistic regression                 Number of obs   =        299
                                                LR chi2(16)     =      68.16
                                                Prob > chi2     =     0.0000
Log likelihood = -254.91066                     Pseudo R2       =     0.1179

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   25.13485   38.65189     2.10   0.036        1.234     511.962
      Latino |   .0000213   .0278722    -0.01   0.993            0           .
       Other |   .0000232   .0304575    -0.01   0.994            0           .
   AsianMale |  (omitted)
```

```
   BlackMale |   .3317377   .5794673    -0.63   0.528      .010813    10.17754
  LatinoMale |   .0288965    65.6215    -0.00   0.999            0           .
   OtherMale |  (omitted)
        male |    31.9317   33.01269     3.35   0.001      4.20925    242.2364
         age |    1.01072   .0278866     0.39   0.699     .9575148    1.066882
      tenure |    .996975   .0272738    -0.11   0.912     .9449271     1.05189
-------------+----------------------------------------------------------------
3            |
       Asian |  (omitted)
       Black |   3.261373   2.620701     1.47   0.141     .6751665    15.75397
      Latino |   2.83e-06   .0020361    -0.02   0.986            0           .
       Other |   2.73e-06   .0019678    -0.02   0.986            0           .
   AsianMale |  (omitted)
   BlackMale |   .9146301   1.043639    -0.08   0.938     .0977196      8.5607
  LatinoMale |   .2681093   334.4935    -0.00   0.999            0           .
   OtherMale |  (omitted)
        male |   3.609151   1.026619     4.51   0.000      2.06672    6.302726
         age |   1.009782   .0182565     0.54   0.590     .9746267    1.046206
      tenure |    1.02273   .0183826     1.25   0.211     .9873279    1.059401
------------------------------------------------------------------------------


--------->  region = 9

note: Asian omitted because of collinearity
note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -212.42355
Iteration 1:   log likelihood = -196.30347
Iteration 2:   log likelihood = -195.41904
Iteration 3:   log likelihood = -195.29447
Iteration 4:   log likelihood = -195.26733
Iteration 5:   log likelihood = -195.26164
Iteration 6:   log likelihood = -195.26068
Iteration 7:   log likelihood = -195.26045
Iteration 8:   log likelihood =  -195.2604
Iteration 9:   log likelihood = -195.26039

Multinomial logistic regression                 Number of obs   =        209
                                                LR chi2(14)     =      34.33
                                                Prob > chi2     =     0.0018
Log likelihood = -195.26039                     Pseudo R2       =     0.0808

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
       Asian |  (omitted)
       Black |   .4710064   .6027912    -0.59   0.556     .0383411    5.786146
      Latino |   2.52e-07   .0006504    -0.01   0.995            0           .
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   9.049876   14.39702     1.38   0.166     .4004116    204.5402
  LatinoMale |    6672542   9.98e+10     0.00   0.999            0           .
   OtherMale |  (omitted)
        male |   .3262062   .1114153    -3.28   0.001     .1670188    .6371169
         age |   .9477301   .0243689    -2.09   0.037     .9011515    .9967163
      tenure |   .9935108   .0218977    -0.30   0.768      .951506     1.03737
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   5.293435   5.498646     1.60   0.109     .6910946    40.54504
      Latino |   2.18e-07   .0008752    -0.00   0.997            0           .
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   1.54e-07   .0002206    -0.01   0.991            0           .
```

```
  LatinoMale |   1.58e+15   1.69e+19     0.00   0.997            0           .
   OtherMale |  (omitted)
        male |   1.036956   .5171665     0.07   0.942     .3901543    2.756034
         age |   .9675503   .0333508    -0.96   0.339     .9043431    1.035175
      tenure |    1.01761   .0294401     0.60   0.546     .9615138    1.076979
-------------+----------------------------------------------------------------
3            |  (base outcome)
-------------------------------------------------------------------------------


--------->  region = 10

Iteration 0:   log likelihood = -2585.0173
Iteration 1:   log likelihood = -2488.5036
Iteration 2:   log likelihood = -2487.0179
Iteration 3:   log likelihood = -2486.7626
Iteration 4:   log likelihood = -2486.7232
Iteration 5:   log likelihood = -2486.7137
Iteration 6:   log likelihood = -2486.7117
Iteration 7:   log likelihood = -2486.7113
Iteration 8:   log likelihood = -2486.7112
Iteration 9:   log likelihood = -2486.7112

Multinomial logistic regression                 Number of obs   =       2565
                                                LR chi2(22)     =     196.61
                                                Prob > chi2     =     0.0000
Log likelihood = -2486.7112                     Pseudo R2       =     0.0380

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   .3966634   .4240919    -0.86   0.387     .0487935    3.224649
       Black |   1.070918   .2011968     0.36   0.715     .7410345    1.547655
      Latino |   1.786598   .5463875     1.90   0.058     .9810867    3.253465
       Other |   .8379344   .6618389    -0.22   0.823     .1781936    3.940287
   AsianMale |   2.465864   2.829197     0.79   0.431     .2602239    23.36636
   BlackMale |   1.451722   .4144059     1.31   0.192     .8296615    2.540188
  LatinoMale |    .937671   .4289448    -0.14   0.888     .3825268    2.298472
   OtherMale |    1.21791   1.299523     0.18   0.853     .1504439    9.859523
        male |     1.9275   .2384535     5.30   0.000     1.512485    2.456392
         age |   .9743153   .0070064    -3.62   0.000     .9606794    .9881448
      tenure |   1.028737   .0076074     3.83   0.000     1.013934    1.043756
-------------+----------------------------------------------------------------
3            |
       Asian |   1.208871   .6540175     0.35   0.726     .4186653    3.490542
       Black |   .9563249    .170528    -0.25   0.802     .6742527    1.356402
      Latino |    2.23175   .6036341     2.97   0.003     1.313458    3.792057
       Other |   1.56e-06   .0006738    -0.03   0.975            0           .
   AsianMale |   .5061806   .3292229    -1.05   0.295     .1414747    1.811057
   BlackMale |   .7741645   .2247509    -0.88   0.378     .4382454    1.367569
  LatinoMale |   .6396766    .269119    -1.06   0.288     .2804469    1.459051
   OtherMale |     340766   1.48e+08     0.03   0.977            0           .
        male |   2.251201   .2494613     7.32   0.000     1.811718    2.797294
         age |   1.000215   .0065851     0.03   0.974     .9873916    1.013205
      tenure |   1.048977   .0068902     7.28   0.000     1.035559    1.062569
------------------------------------------------------------------------------


--------->  region = 11

Iteration 0:   log likelihood = -1812.7252
Iteration 1:   log likelihood = -1726.5652
Iteration 2:   log likelihood = -1724.5621
Iteration 3:   log likelihood = -1724.1848
```

```
Iteration 4:   log likelihood = -1724.1229
Iteration 5:   log likelihood = -1724.1165
Iteration 6:   log likelihood = -1724.1151
Iteration 7:   log likelihood = -1724.1148
Iteration 8:   log likelihood = -1724.1148
Iteration 9:   log likelihood = -1724.1148

Multinomial logistic regression                 Number of obs   =       1710
                                                LR chi2(22)     =     177.22
                                                Prob > chi2     =     0.0000
Log likelihood = -1724.1148                     Pseudo R2       =     0.0489

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   2.42e-07    .000314    -0.01   0.991           0           .
       Black |   1.613103   .4453935     1.73   0.083     .9389381    2.771323
      Latino |    1.53276   .5575417     1.17   0.240     .7513623    3.126791
       Other |   1.278424   1.146895     0.27   0.784     .2203173    7.418251
   AsianMale |   8.07e+13   2.79e+17     0.01   0.993           0           .
   BlackMale |   1.324007   .5791495     0.64   0.521     .5617667    3.120501
  LatinoMale |   1.637794   .9444074     0.86   0.392     .5289661    5.070968
   OtherMale |   1.130657   1.530747     0.09   0.928     .0796024    16.05963
        male |   1.250359   .1691439     1.65   0.099     .9591519    1.629979
         age |   .9780461   .0080956    -2.68   0.007     .9623071    .9940426
      tenure |   .9572532   .0078125    -5.35   0.000     .9420627    .9726886
-------------+----------------------------------------------------------------
3            |
       Asian |   5.56e-07    .000709    -0.01   0.991           0           .
       Black |   1.784196   .5114599     2.02   0.043      1.01727    3.129314
      Latino |   2.159433   .7998906     2.08   0.038     1.044817    4.463127
       Other |   1.03e-06   .0008759    -0.02   0.987           0           .
   AsianMale |   811560.3   4.40e+09     0.00   0.998           0           .
   BlackMale |   .2990303   .1519382    -2.38   0.018     .1104631    .8094933
  LatinoMale |   .5804187   .3498756    -0.90   0.367     .1780895    1.891666
   OtherMale |   .3401155    470.815    -0.00   0.999           0           .
        male |   2.371733   .3028838     6.76   0.000     1.846556    3.046275
         age |   1.034387   .0083643     4.18   0.000     1.018122    1.050911
      tenure |   .9757106   .0070712    -3.39   0.001     .9619492    .9896689
------------------------------------------------------------------------------


---------> region = 12

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood =  -670.5475
Iteration 1:   log likelihood = -638.59926
Iteration 2:   log likelihood = -636.29607
Iteration 3:   log likelihood = -635.71901
Iteration 4:   log likelihood = -635.63032
Iteration 5:   log likelihood = -635.61215
Iteration 6:   log likelihood = -635.60833
Iteration 7:   log likelihood = -635.60745
Iteration 8:   log likelihood = -635.60724
Iteration 9:   log likelihood =  -635.6072
Iteration 10:  log likelihood = -635.60719

Multinomial logistic regression                 Number of obs   =        664
                                                LR chi2(18)     =      69.88
                                                Prob > chi2     =     0.0000
Log likelihood = -635.60719                     Pseudo R2       =     0.0521

------------------------------------------------------------------------------
```

```
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   2.283362   3.267251     0.58   0.564     .1382277    37.71851
       Black |   .8927793    .480977    -0.21   0.833     .3105752    2.566383
      Latino |   8.38e-07   .0007712    -0.02   0.988            0           .
       Other |   2.40e+08   2.16e+12     0.00   0.998            0           .
   AsianMale |  (omitted)
   BlackMale |   2.428845   1.762413     1.22   0.221     .5858047     10.0704
  LatinoMale |    4508803   4.15e+09     0.02   0.987            0           .
   OtherMale |  (omitted)
        male |   1.566809   .3938183     1.79   0.074     .9573395    2.564283
         age |   .9855959   .0158391    -0.90   0.367     .9550356    1.017134
      tenure |   1.032043   .0165517     1.97   0.049     1.000107    1.064999
-------------+----------------------------------------------------------------
3            |
       Asian |   1.48e-07   .0003066    -0.01   0.994            0           .
       Black |   1.140473   .4747137     0.32   0.752     .5044039    2.578645
      Latino |   1.768491   1.183388     0.85   0.394     .4764533    6.564252
       Other |   1.000476   13899.91     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   .5918031   .3737674    -0.83   0.406      .171625    2.040676
  LatinoMale |   8.40e-08   .0001207    -0.01   0.991            0           .
   OtherMale |  (omitted)
        male |   3.028613   .5946807     5.64   0.000     2.061136    4.450212
         age |   1.009688   .0121445     0.80   0.423      .986164    1.033774
      tenure |   1.034573   .0124645     2.82   0.005     1.010429    1.059294
------------------------------------------------------------------------------


---------->  region = 13

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1053.1728
Iteration 1:   log likelihood = -1021.8579
Iteration 2:   log likelihood = -1021.1967
Iteration 3:   log likelihood = -1021.0507
Iteration 4:   log likelihood = -1021.0273
Iteration 5:   log likelihood = -1021.0219
Iteration 6:   log likelihood = -1021.0206
Iteration 7:   log likelihood = -1021.0203
Iteration 8:   log likelihood = -1021.0203

Multinomial logistic regression                 Number of obs   =        978
                                                LR chi2(18)     =      64.30
                                                Prob > chi2     =     0.0000
Log likelihood = -1021.0203                     Pseudo R2       =     0.0305

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   1.725125   .6531507     1.44   0.150      .821385    3.623219
      Latino |   1.773629   .5827342     1.74   0.081     .9315292    3.376985
       Other |   5.03e-06   .0031805    -0.02   0.985            0           .
   AsianMale |  (omitted)
   BlackMale |   2.054111   1.365073     1.08   0.279     .5584089    7.556062
  LatinoMale |   1.068456   .5451071     0.13   0.897     .3930872    2.904186
   OtherMale |   166097.8   1.05e+08     0.02   0.985            0           .
        male |   1.766713   .3328197     3.02   0.003     1.221275     2.55575
         age |   .9641189   .0116896    -3.01   0.003     .9414777    .9873046
```

```
      tenure |   1.031294   .0132554     2.40   0.017     1.005639    1.057604
-------------+----------------------------------------------------------------
3            |
       Asian |  (omitted)
       Black |   1.382379   .5176103     0.86   0.387     .6636026    2.879694
      Latino |    1.82622   .5630248     1.95   0.051     .9979921    3.341789
       Other |   1.138553   1.410801     0.10   0.917     .1003726    12.91492
   AsianMale |  (omitted)
   BlackMale |   1.339182   .9045857     0.43   0.665     .3563472    5.032758
  LatinoMale |   .6493582   .3219938    -0.87   0.384     .2456991    1.716189
   OtherMale |   1.24e-06   .0006952    -0.02   0.981            0           .
        male |   2.080143    .352708     4.32   0.000     1.491983    2.900164
         age |   1.000432   .0108671     0.04   0.968      .979358     1.02196
      tenure |   1.030924   .0117703     2.67   0.008      1.00811    1.054253
------------------------------------------------------------------------------


---------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -279.03791
Iteration 1:   log likelihood = -260.07436
Iteration 2:   log likelihood = -258.56852
Iteration 3:   log likelihood = -256.56701
Iteration 4:   log likelihood = -255.97787
Iteration 5:   log likelihood = -255.92604
Iteration 6:   log likelihood = -255.91451
Iteration 7:   log likelihood =   -255.912
Iteration 8:   log likelihood = -255.91149
Iteration 9:   log likelihood = -255.91137
Iteration 10:  log likelihood = -255.91134
Iteration 11:  log likelihood = -255.91134

Multinomial logistic regression                 Number of obs   =        292
                                                LR chi2(18)     =      46.25
                                                Prob > chi2     =     0.0003
Log likelihood = -255.91134                     Pseudo R2       =     0.0829

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   1.46e-07   .0006275    -0.00   0.997            0           .
      Latino |   1.65e-07   .0004943    -0.01   0.996            0           .
       Other |   6.25e-07   .0020622    -0.00   0.997            0           .
   AsianMale |  (omitted)
   BlackMale |   7.23e+13   3.37e+17     0.01   0.995            0           .
  LatinoMale |   8.48e+07   2.54e+11     0.01   0.995            0           .
   OtherMale |   .4131446   1948.665    -0.00   1.000            0           .
        male |    1.40888    .607606     0.79   0.427     .6050303    3.280731
         age |    .965863   .0306429    -1.09   0.274     .9076333    1.027828
      tenure |   1.033144   .0285908     1.18   0.239     .9785996    1.090728
-------------+----------------------------------------------------------------
3            |
       Asian |  (omitted)
       Black |   3.08e-07   .0006701    -0.01   0.994            0           .
      Latino |   2.87e-07   .0004414    -0.01   0.992            0           .
       Other |   2.808482   4.051459     0.72   0.474     .1661673    47.46764
   AsianMale |  (omitted)
   BlackMale |   1.72e+13   4.88e+16     0.01   0.991            0           .
  LatinoMale |    4855889   7.46e+09     0.01   0.992            0           .
   OtherMale |    .284715   .5810951    -0.62   0.538     .0052135    15.54848
        male |   3.822772   1.115423     4.60   0.000     2.157801    6.772442
```

```
         age |    1.00256   .0191059     0.13   0.893     .9658034    1.040715
      tenure |    .991405   .0168803    -0.51   0.612     .9588661    1.025048
------------------------------------------------------------------------------


--------->  region = 15

note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -274.13512
Iteration 1:   log likelihood =  -254.0614
Iteration 2:   log likelihood = -252.07569
Iteration 3:   log likelihood = -252.01303
Iteration 4:   log likelihood = -252.00332
Iteration 5:   log likelihood =   -252.001
Iteration 6:   log likelihood =  -252.0005
Iteration 7:   log likelihood =  -252.0004
Iteration 8:   log likelihood = -252.00038

Multinomial logistic regression                 Number of obs   =        291
                                                LR chi2(14)     =      44.27
                                                Prob > chi2     =     0.0001
Log likelihood = -252.00038                     Pseudo R2       =     0.0807

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   .0000128    .016334    -0.01   0.993            0           .
       Black |   4.005128   5951.347     0.00   0.999            0           .
      Latino |   4.977422   4.312881     1.85   0.064     .9108518    27.19952
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   .3173834   .3208451    -1.14   0.256     .0437621    2.301812
   OtherMale |  (omitted)
        male |   4.348599   2.660862     2.40   0.016     1.310715    14.42749
         age |   .9825783   .0357944    -0.48   0.629     .9148686    1.055299
      tenure |   1.050681   .0331348     1.57   0.117     .9877044    1.117673
-------------+----------------------------------------------------------------
3            |
       Asian |   6.92e-06   .0041929    -0.02   0.984            0           .
       Black |   874600.6   5.34e+08     0.02   0.982            0           .
      Latino |   1.139829   .7519137     0.20   0.843     .3128424    4.152923
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   .3423972   .2689755    -1.36   0.172     .0734269    1.596632
   OtherMale |  (omitted)
        male |   3.957885   1.155425     4.71   0.000     2.233429    7.013815
         age |   1.001208    .019485     0.06   0.951     .9637369    1.040135
      tenure |   1.005878   .0179732     0.33   0.743     .9712614    1.041729
------------------------------------------------------------------------------


--------->  region = 16

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -395.99946
Iteration 1:   log likelihood = -373.58371
Iteration 2:   log likelihood = -372.71862
Iteration 3:   log likelihood = -372.51763
```

```
Iteration 4:   log likelihood = -372.47509
Iteration 5:   log likelihood = -372.46561
Iteration 6:   log likelihood = -372.46387
Iteration 7:   log likelihood = -372.46369
Iteration 8:   log likelihood = -372.46366
Iteration 9:   log likelihood = -372.46365

Multinomial logistic regression                 Number of obs   =        381
                                                LR chi2(18)     =      47.07
                                                Prob > chi2     =     0.0002
Log likelihood = -372.46365                     Pseudo R2       =     0.0594

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
       Asian |  (omitted)
       Black |   1.433333   1.395591     0.37   0.712     .2125978    9.663515
      Latino |   9.18e-08   .0001613    -0.01   0.993            0           .
       Other |    7715863   1.43e+10     0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |   2.434564   20114.39     0.00   1.000            0           .
  LatinoMale |   2.98e+07   5.24e+10     0.01   0.992            0           .
   OtherMale |   .7287364   1819.881    -0.00   1.000            0           .
        male |   .4191603   .1055909    -3.45   0.001     .2558313    .6867627
         age |   .9640439   .0168003    -2.10   0.036     .9316719    .9975408
      tenure |   .9848039   .0157501    -0.96   0.338     .9544131    1.016162
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   7.85e-07    .000961    -0.01   0.991            0           .
      Latino |   1.74e-07   .0004236    -0.01   0.995            0           .
       Other |   1.414574   4912.986     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   3.26e+14   1.83e+18     0.01   0.995            0           .
  LatinoMale |   1.22e+07   2.97e+10     0.01   0.995            0           .
   OtherMale |    5686853   2.19e+10     0.00   0.997            0           .
        male |   .8687416   .2777191    -0.44   0.660     .4642786    1.625558
         age |    .959103   .0204735    -1.96   0.050     .9198035    1.000082
      tenure |   1.007023   .0189913     0.37   0.711     .9704805    1.044942
-------------+----------------------------------------------------------------
3            |  (base outcome)
------------------------------------------------------------------------------


---------->  region = 17

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -402.67234
Iteration 1:   log likelihood = -375.46578
Iteration 2:   log likelihood = -374.38031
Iteration 3:   log likelihood = -374.17127
Iteration 4:   log likelihood = -374.11985
Iteration 5:   log likelihood = -374.10996
Iteration 6:   log likelihood = -374.10823
Iteration 7:   log likelihood = -374.10805
Iteration 8:   log likelihood = -374.10801
Iteration 9:   log likelihood =   -374.108

Multinomial logistic regression                 Number of obs   =        405
                                                LR chi2(18)     =      57.13
                                                Prob > chi2     =     0.0000
Log likelihood =   -374.108                     Pseudo R2       =     0.0709

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
```

```
-------------+----------------------------------------------------------------
1            |
       Asian |  (omitted)
       Black |    .235394   .2049625    -1.66   0.097     .0427205    1.297043
      Latino |   .2854721   .2177271    -1.64   0.100     .0640265    1.272822
       Other |   7.08e-08   .0001683    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   1.70e-06   .0023325    -0.01   0.992            0           .
  LatinoMale |   2.913765    2.76365     1.13   0.260     .4540527    18.69833
   OtherMale |   5.14e+07   1.22e+11     0.01   0.994            0           .
        male |   .2848108   .0708683    -5.05   0.000     .1748861    .4638286
         age |   .9889089   .0159058    -0.69   0.488     .9582205     1.02058
      tenure |    .985933   .0144898    -0.96   0.335     .9579387    1.014745
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   1.091374   1.277234     0.07   0.940     .1101067    10.81767
      Latino |   4.54e-07   .0005038    -0.01   0.990            0           .
       Other |   1.59e-07   .0006502    -0.00   0.997            0           .
   AsianMale |  (omitted)
   BlackMale |   2.86e-07   .0006432    -0.01   0.995            0           .
  LatinoMale |    3862514   4.29e+09     0.01   0.989            0           .
   OtherMale |   8.774776   39562.16     0.00   1.000            0           .
        male |     1.0279   .3981655     0.07   0.943     .4810953    2.196195
         age |   .9500637   .0218223    -2.23   0.026     .9082412     .993812
      tenure |   .9949803   .0213333    -0.23   0.814     .9540342    1.037684
-------------+----------------------------------------------------------------
3            |  (base outcome)
------------------------------------------------------------------------------


---------->  region = 18

note: Asian omitted because of collinearity
note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -425.52761
Iteration 1:   log likelihood = -411.03922
Iteration 2:   log likelihood = -410.66745
Iteration 3:   log likelihood = -410.66419
Iteration 4:   log likelihood = -410.66419

Multinomial logistic regression                 Number of obs   =        418
                                                LR chi2(14)     =      29.73
                                                Prob > chi2     =     0.0083
Log likelihood = -410.66419                     Pseudo R2       =     0.0349

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   1.399035   1.671857     0.28   0.779     .1344734    14.55529
      Latino |   2.378144    1.52455     1.35   0.177     .6769567    8.354404
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   5.672064   9.534635     1.03   0.302     .2103232    152.9661
  LatinoMale |    .475918   .3863909    -0.91   0.360      .096929     2.33674
   OtherMale |  (omitted)
        male |   1.762669   .6087391     1.64   0.101      .895793    3.468438
         age |   .9452127   .0226792    -2.35   0.019     .9017912    .9907249
      tenure |   1.023707   .0201198     1.19   0.233     .9850227     1.06391
-------------+----------------------------------------------------------------
3            |
```

```
       Asian |  (omitted)
       Black |   1.253061   1.184063     0.24   0.811     .1966262    7.985524
      Latino |   1.851313   1.042126     1.09   0.274     .6142259    5.579964
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   2.083222   3.129959     0.49   0.625     .1096072    39.59427
  LatinoMale |   .7618749   .5134662    -0.40   0.687     .2033367    2.854642
   OtherMale |  (omitted)
        male |   1.949194   .5040373     2.58   0.010     1.174208    3.235677
         age |    .988408   .0174211    -0.66   0.508     .9548462    1.023149
      tenure |   1.036406   .0145414     2.55   0.011     1.008294    1.065302
------------------------------------------------------------------------------


--------->  region = 19

Iteration 0:   log likelihood = -652.09841
Iteration 1:   log likelihood = -611.97685
Iteration 2:   log likelihood = -610.99027
Iteration 3:   log likelihood = -610.81378
Iteration 4:   log likelihood = -610.77491
Iteration 5:   log likelihood = -610.76557
Iteration 6:   log likelihood = -610.76361
Iteration 7:   log likelihood =  -610.7632
Iteration 8:   log likelihood = -610.76311
Iteration 9:   log likelihood = -610.76308

Multinomial logistic regression                 Number of obs   =        612
                                                LR chi2(22)     =      82.67
                                                Prob > chi2     =     0.0000
Log likelihood = -610.76308                     Pseudo R2       =     0.0634

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   5.76e-07   .0009466    -0.01   0.993            0           .
       Black |   .5749414   .4133273    -0.77   0.441      .140505    2.352639
      Latino |     1.2997    .369608     0.92   0.357     .7443532    2.269381
       Other |   2.651429   3.800152     0.68   0.496     .1597711    44.00092
   AsianMale |   8.39e+12   1.73e+16     0.01   0.988            0           .
   BlackMale |   1.366084   1.531792     0.28   0.781     .1517133    12.30073
  LatinoMale |   2.079708   .8389549     1.82   0.070     .9432511    4.585401
   OtherMale |   7.35e-07   .0005942    -0.02   0.986            0           .
        male |   1.039301   .2745359     0.15   0.884     .6192886    1.744175
         age |   .9759608   .0134489    -1.77   0.077     .9499542    1.002679
      tenure |   1.049459   .0136014     3.72   0.000     1.023136    1.076459
-------------+----------------------------------------------------------------
3            |
       Asian |   7.81e-07   .0014988    -0.01   0.994            0           .
       Black |   .4508546   .3790125    -0.95   0.343     .0867902    2.342082
      Latino |   2.036949    .653462     2.22   0.027     1.086203    3.819876
       Other |   5.29e-06   .0055913    -0.01   0.991            0           .
   AsianMale |    1360441   3.87e+09     0.00   0.996            0           .
   BlackMale |   3.022237   3.452594     0.97   0.333     .3220465    28.36211
  LatinoMale |   1.001595   .4507075     0.00   0.997     .4146293    2.419492
   OtherMale |   284767.2   3.01e+08     0.01   0.991            0           .
        male |   1.539612   .4631381     1.43   0.151     .8538021    2.776293
         age |   .9829168   .0155987    -1.09   0.278     .9528146     1.01397
      tenure |   1.093186   .0162999     5.98   0.000     1.061701    1.125604
------------------------------------------------------------------------------


--------->  region = 20
```

```
Iteration 0:   log likelihood = -1813.3241
Iteration 1:   log likelihood = -1712.8153
Iteration 2:   log likelihood = -1709.6268
Iteration 3:   log likelihood = -1709.1672
Iteration 4:   log likelihood = -1709.0899
Iteration 5:   log likelihood = -1709.0725
Iteration 6:   log likelihood = -1709.0681
Iteration 7:   log likelihood = -1709.0673
Iteration 8:   log likelihood = -1709.0672
Iteration 9:   log likelihood = -1709.0671
Iteration 10:  log likelihood = -1709.0671

Multinomial logistic regression                 Number of obs   =       1867
                                                LR chi2(22)     =     208.51
                                                Prob > chi2     =     0.0000
Log likelihood = -1709.0671                     Pseudo R2       =     0.0575

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   3.32e-07    .000476    -0.01   0.992            0           .
       Black |   .9928674   .3291329    -0.02   0.983     .5184659    1.901351
      Latino |   .6991746   .1383147    -1.81   0.070     .4744561    1.030327
       Other |   1.63e-07   .0003238    -0.01   0.994            0           .
   AsianMale |   .8445259   3027.277    -0.00   1.000            0           .
   BlackMale |   1.795059   .8442848     1.24   0.214     .7140461    4.512647
  LatinoMale |   2.307946   .6406575     3.01   0.003     1.339499    3.976571
   OtherMale |   1.26e+07   2.50e+10     0.01   0.993            0           .
        male |   1.645342   .2579243     3.18   0.001     1.210101    2.237128
         age |   .9649224   .0085385    -4.04   0.000     .9483314    .9818036
      tenure |   1.019134   .0090345     2.14   0.033      1.00158    1.036996
-------------+----------------------------------------------------------------
3            |
       Asian |   1.470186   1.268549     0.45   0.655     .2709651    7.976846
       Black |   1.119157   .3539032     0.36   0.722     .6021732    2.079987
      Latino |   .9649786   .1837422    -0.19   0.851     .6644156    1.401508
       Other |   2.55e-07   .0005062    -0.01   0.994            0           .
   AsianMale |   1.583666   2.647601     0.27   0.783     .0597875    41.94857
   BlackMale |   .3825827   .2110623    -1.74   0.082     .1297587    1.128013
  LatinoMale |   1.082328   .2969988     0.29   0.773     .6320955    1.853253
   OtherMale |     1.2501   3200.975     0.00   1.000            0           .
        male |   2.186584   .3371892     5.07   0.000     1.616232    2.958206
         age |    .989062   .0088104    -1.23   0.217     .9719438    1.006482
      tenure |   1.076755   .0092322     8.63   0.000     1.058811    1.095002
------------------------------------------------------------------------------
```

1992-93

```
.char ethnicity[omit] "White"

. mlogit admin  Asian Black Latino Other AsianMale BlackMale LatinoMale OtherMale male
tenure age if validcert1993a==1, rrr iter(20)

Iteration 0:   log likelihood = -20293.243
Iteration 1:   log likelihood = -19715.148
Iteration 2:   log likelihood = -19710.074
Iteration 3:   log likelihood = -19710.071
Iteration 4:   log likelihood = -19710.071

Multinomial logistic regression                 Number of obs   =      19719
                                                LR chi2(22)     =    1166.34
                                                Prob > chi2     =     0.0000
Log likelihood = -19710.071                     Pseudo R2       =     0.0287
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |    .551651   .2684988    -1.22   0.222     .2125048    1.432056
       Black |   1.127693   .0833725     1.63   0.104     .9755731    1.303532
      Latino |    1.20996   .0851686     2.71   0.007     1.054035     1.38895
       Other |   .4380633   .1925379    -1.88   0.060     .1851041    1.036711
   AsianMale |   2.939393   1.732362     1.83   0.067     .9259617    9.330871
   BlackMale |    1.79322   .2075284     5.05   0.000     1.429304    2.249794
  LatinoMale |   1.517457   .1530586     4.13   0.000     1.245259    1.849154
   OtherMale |   1.690746    .950875     0.93   0.350      .561517    5.090891
        male |   1.429909   .0634265     8.06   0.000     1.310845    1.559786
      tenure |   1.006003   .0025025     2.41   0.016      1.00111     1.01092
         age |   .9716549    .002549   -10.96   0.000     .9666717    .9766637
-------------+----------------------------------------------------------------
3            |
       Asian |   .6607302   .2564677    -1.07   0.286     .3087618     1.41392
       Black |   .7369161   .0582495    -3.86   0.000     .6311534    .8604016
      Latino |   1.235682   .0842474     3.10   0.002     1.081117    1.412344
       Other |   .3378834   .1607838    -2.28   0.023      .132959    .8586499
   AsianMale |   .8899737   .4512888    -0.23   0.818     .3294193    2.404393
   BlackMale |   1.076934   .1332748     0.60   0.549     .8449864    1.372552
  LatinoMale |   .8384754    .082734    -1.79   0.074     .6910359    1.017373
   OtherMale |   1.942459   1.101367     1.17   0.242     .6393276    5.901741
        male |   2.049662   .0821924    17.90   0.000     1.894736    2.217256
      tenure |   1.027092   .0022618    12.14   0.000     1.022669    1.031535
         age |    1.00924   .0024581     3.78   0.000     1.004434    1.014069
------------------------------------------------------------------------------

. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=19719)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
       Asian |      2.385    2    0.303
       Black |     22.850    2    0.000
      Latino |     13.120    2    0.001
       Other |      9.313    2    0.009
   AsianMale |      4.240    2    0.120
   BlackMale |     27.049    2    0.000
  LatinoMale |     29.816    2    0.000
   OtherMale |      2.014    2    0.365
        male |    331.994    2    0.000
      tenure |    152.024    2    0.000
         age |    180.964    2    0.000
---------------------------------------

**** Wald tests for independent variables (N=19719)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
       Asian |      2.243    2    0.326
       Black |     22.013    2    0.000
      Latino |     13.167    2    0.001
       Other |      7.847    2    0.020
   AsianMale |      3.851    2    0.146
   BlackMale |     27.031    2    0.000
  LatinoMale |     29.709    2    0.000
   OtherMale |      1.927    2    0.382
```

```
        male |    327.169    2    0.000
      tenure |    149.886    2    0.000
         age |    176.182    2    0.000
-------------------------------------

**** Hausman tests of IIA assumption (N=19719)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+-----------------------------------
       2 |    -1.823   11     ---    ---
       3 |    -5.171   12     ---    ---
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=19719)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+------------------------------------------------------
       2 |  -4815.298  -4812.957   4.682   12    0.968   for Ho
       3 |  -4210.175  -4205.231   9.889   12    0.626   for Ho
-------------------------------------------------------------------

**** Wald tests for combining alternatives (N=19719)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  |  538.144   11    0.000
       2-       1  |  425.329   11    0.000
       3-       1  |  692.342   11    0.000
-----------------------------------------------

**** LR tests for combining alternatives (N=19719)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  |  566.527   11    0.000
       2-       1  |  432.993   11    0.000
       3-       1  |  724.994   11    0.000
-----------------------------------------------

by region

. bysort region: mlogit admin  Asian Black Latino Other AsianMale BlackMale LatinoMale
OtherMale male tenure age if validcert1993a==1, rrr iter(20)


---------->  region = 1

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1293.7549
Iteration 1:   log likelihood = -1228.0739
Iteration 2:   log likelihood = -1227.1403
Iteration 3:   log likelihood = -1226.9816
Iteration 4:   log likelihood = -1226.9555
Iteration 5:   log likelihood = -1226.9529
Iteration 6:   log likelihood = -1226.9523
```

```
Iteration 7:   log likelihood = -1226.9522
Iteration 8:   log likelihood = -1226.9522
Iteration 9:   log likelihood = -1226.9522

Multinomial logistic regression                 Number of obs   =       1221
                                                LR chi2(20)     =     133.61
                                                Prob > chi2     =     0.0000
Log likelihood = -1226.9522                     Pseudo R2       =     0.0516

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   7.90e-07   .0014315    -0.01   0.994            0           .
       Black |   4.21e+07   1.31e+11     0.01   0.995            0           .
      Latino |   1.273016   .3311485     0.93   0.353     .7645601    2.119611
       Other |   4.34e-07   .0011222    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   4.46e-08   .0001385    -0.01   0.996            0           .
  LatinoMale |   1.366907   .4792595     0.89   0.373     .6875335    2.717589
   OtherMale |    5780942   1.49e+10     0.01   0.995            0           .
        male |   1.808294   .5594837     1.91   0.056     .9860718    3.316116
      tenure |   1.025692   .0102945     2.53   0.011     1.005713    1.046069
         age |    .944906   .0101946    -5.25   0.000     .9251347    .9650998
-------------+----------------------------------------------------------------
3            |
       Asian |   1.98e-07   .0003617    -0.01   0.993            0           .
       Black |   1.824156   9399.817     0.00   1.000            0           .
      Latino |   .9018492   .2037913    -0.46   0.648     .5791454    1.404366
       Other |   2.26e-07   .0005839    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   7.36e-07   .0039547    -0.00   0.998            0           .
  LatinoMale |   2.807736   .9830306     2.95   0.003     1.413636    5.576667
   OtherMale |   1.90e+07   4.91e+10     0.01   0.995            0           .
        male |   .6990935    .215837    -1.16   0.246     .3817128    1.280365
      tenure |   1.054788   .0099869     5.63   0.000     1.035395    1.074545
         age |   .9906821   .0104549    -0.89   0.375     .9704014    1.011387
------------------------------------------------------------------------------


---------->  region = 2

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -812.84779
Iteration 1:   log likelihood = -784.24804
Iteration 2:   log likelihood = -783.60314
Iteration 3:   log likelihood = -782.94859
Iteration 4:   log likelihood = -782.90821
Iteration 5:   log likelihood = -782.90159
Iteration 6:   log likelihood = -782.90088
Iteration 7:   log likelihood = -782.90074
Iteration 8:   log likelihood = -782.90072

Multinomial logistic regression                 Number of obs   =        865
                                                LR chi2(18)     =      59.89
                                                Prob > chi2     =     0.0000
Log likelihood = -782.90072                     Pseudo R2       =     0.0368

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
```

```
       Asian |  (omitted)
       Black |   2.330268   1.496482     1.32   0.188     .6618658    8.204303
      Latino |   .8198668   .2295086    -0.71   0.478      .473656    1.419134
       Other |   7.248265   9.055659     1.59   0.113     .6262976    83.88558
   AsianMale |  (omitted)
   BlackMale |   1.387109   1.356756     0.33   0.738     .2039555     9.43378
  LatinoMale |    1.73905   .6997991     1.38   0.169     .7902888    3.826822
   OtherMale |   4.33e-07   .0002481    -0.03   0.980            0           .
        male |   1.564419   .4298357     1.63   0.103     .9130178    2.680569
      tenure |    1.01919   .0144266     1.34   0.179     .9913035    1.047862
         age |   .9709381   .0144458    -1.98   0.047     .9430336    .9996682
-------------+----------------------------------------------------------------
3            |
       Asian |  (omitted)
       Black |   .9376042   .7604193    -0.08   0.937     .1912823    4.595833
      Latino |   1.139622   .2777548     0.54   0.592     .7068077     1.83747
       Other |   3.52e-06   .0044091    -0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |   1.924681    2.09818     0.60   0.548     .2272094    16.30389
  LatinoMale |   1.209084   .4176718     0.55   0.583     .6143468    2.379576
   OtherMale |   .9118975   1221.356    -0.00   1.000            0           .
        male |   1.997576   .4770879     2.90   0.004     1.250858    3.190059
      tenure |   1.016722   .0117297     1.44   0.151     .9939906    1.039974
         age |    1.01655   .0127401     1.31   0.190     .9918845     1.04183
------------------------------------------------------------------------------


---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -337.96099
Iteration 1:   log likelihood = -323.08751
Iteration 2:   log likelihood = -322.14724
Iteration 3:   log likelihood = -322.00021
Iteration 4:   log likelihood = -321.96601
Iteration 5:   log likelihood =  -321.9589
Iteration 6:   log likelihood = -321.95741
Iteration 7:   log likelihood = -321.95707
Iteration 8:   log likelihood = -321.95699
Iteration 9:   log likelihood = -321.95697

Multinomial logistic regression                 Number of obs   =        339
                                                LR chi2(16)     =      32.01
                                                Prob > chi2     =     0.0100
Log likelihood = -321.95697                     Pseudo R2       =     0.0474

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   1.764168   1.574174     0.64   0.525     .3069091    10.14075
      Latino |    4.61394   3.978864     1.77   0.076     .8512013    25.00988
       Other |   .7686698   2458.053    -0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   .6192027   .9143782    -0.32   0.745     .0342658    11.18934
  LatinoMale |   .3535436    .409148    -0.90   0.369     .0365904     3.41601
   OtherMale |  (omitted)
        male |   1.327813   .4853885     0.78   0.438     .6485986    2.718302
      tenure |   .9794533   .0202513    -1.00   0.315     .9405549     1.01996
         age |   .9937485   .0265596    -0.23   0.814     .9430325    1.047192
-------------+----------------------------------------------------------------
3            |
```

```
       Asian |  (omitted)
       Black |   1.184269   1.033363     0.19   0.846     .2141475     6.54919
      Latino |   .8256319   .9703005    -0.16   0.870     .0824966    8.262986
       Other |    2755284   4.21e+09     0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |   7.58e-07   .0004945    -0.02   0.983            0           .
  LatinoMale |   2.621319   3.403565     0.74   0.458     .2057339    33.39905
   OtherMale |  (omitted)
        male |   2.393909   .6582866     3.17   0.002     1.396499    4.103688
      tenure |   .9891259   .0147517    -0.73   0.463     .9606315    1.018465
         age |   1.031087   .0210086     1.50   0.133     .9907226    1.073097
------------------------------------------------------------------------------


--------->  region = 4

Iteration 0:   log likelihood = -4028.5772
Iteration 1:   log likelihood = -3819.0789
Iteration 2:   log likelihood = -3814.2069
Iteration 3:   log likelihood = -3814.0288
Iteration 4:   log likelihood = -3813.9863
Iteration 5:   log likelihood = -3813.9776
Iteration 6:   log likelihood = -3813.9757
Iteration 7:   log likelihood = -3813.9753
Iteration 8:   log likelihood = -3813.9752
Iteration 9:   log likelihood = -3813.9752

Multinomial logistic regression                 Number of obs   =       3912
                                                LR chi2(22)     =     429.20
                                                Prob > chi2     =     0.0000
Log likelihood = -3813.9752                     Pseudo R2       =     0.0533

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   .6749979   .5546489    -0.48   0.632     .1348547    3.378614
       Black |   .5149712   .0635266    -5.38   0.000     .4043702    .6558231
      Latino |   1.280341   .2566576     1.23   0.218     .8643577    1.896522
       Other |   .2569657   .2760902    -1.26   0.206     .0312841    2.110701
   AsianMale |   1.58e-06    .000829    -0.03   0.980            0           .
   BlackMale |   2.618912   .5165504     4.88   0.000     1.779226    3.854879
  LatinoMale |    2.13883   .6984317     2.33   0.020     1.127762    4.056345
   OtherMale |   2.563616   3.472388     0.70   0.487     .1802646    36.45822
        male |   1.102333   .1021997     1.05   0.293     .9191705    1.321994
      tenure |    1.02058   .0057058     3.64   0.000     1.009458    1.031825
         age |   .9647947   .0053796    -6.43   0.000     .9543083    .9753963
-------------+----------------------------------------------------------------
3            |
       Asian |   1.031033   .8639456     0.04   0.971     .1995332    5.327579
       Black |   .3189582    .048099    -7.58   0.000     .2373407    .4286426
      Latino |   2.409716    .482197     4.40   0.000     1.627931    3.566941
       Other |   .5356667   .5806734    -0.58   0.565     .0639993    4.483469
   AsianMale |   .2336845    .323558    -1.05   0.294     .0154904    3.525314
   BlackMale |   2.292682   .5335488     3.57   0.000      1.45296    3.617711
  LatinoMale |   .8310216   .3021869    -0.51   0.611     .4074621    1.694874
   OtherMale |   1.392801   1.914839     0.24   0.810     .0941126     20.6125
        male |   1.289254   .1322809     2.48   0.013     1.054394    1.576428
      tenure |   1.081486   .0066367    12.77   0.000     1.068557    1.094573
         age |   .9969529   .0064075    -0.47   0.635     .9844731    1.009591
------------------------------------------------------------------------------


--------->  region = 5
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -571.66916
Iteration 1:   log likelihood = -515.49435
Iteration 2:   log likelihood = -513.25062
Iteration 3:   log likelihood = -513.05212
Iteration 4:   log likelihood = -513.02096
Iteration 5:   log likelihood = -513.01351
Iteration 6:   log likelihood = -513.01192
Iteration 7:   log likelihood = -513.01159
Iteration 8:   log likelihood = -513.01152
Iteration 9:   log likelihood =  -513.0115

Multinomial logistic regression                 Number of obs   =        621
                                                LR chi2(20)     =     117.32
                                                Prob > chi2     =     0.0000
Log likelihood =  -513.0115                     Pseudo R2       =     0.1026

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   1.74e+08   8.66e+11     0.00   0.997            0           .
       Black |   2.049427   .8550763     1.72   0.085      .904666    4.642765
      Latino |     8.2214   10.54171     1.64   0.100     .6660571    101.4799
       Other |   1.58e-06    .003481    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |    .817476   .4632552    -0.36   0.722     .2692204     2.48223
  LatinoMale |   .0914969   .1639271    -1.33   0.182     .0027314    3.064996
   OtherMale |   .1806247   488.8667    -0.00   0.999            0           .
        male |   5.047287   1.491218     5.48   0.000     2.828596    9.006272
      tenure |   1.051517   .0175157     3.02   0.003     1.017742    1.086414
         age |    .940732   .0176983    -3.25   0.001     .9066757    .9760675
-------------+----------------------------------------------------------------
3            |
       Asian |   2.553161   25204.57     0.00   1.000            0           .
       Black |   1.451209   .5684262     0.95   0.342     .6734755    3.127076
      Latino |   5.09e-06   .0054649    -0.01   0.991            0           .
       Other |   8.60e-07   .0016688    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |    .495444   .2796913    -1.24   0.213     .1638584     1.49803
  LatinoMale |   .1147747   173.6505    -0.00   0.999            0           .
   OtherMale |   .4838494   1139.273    -0.00   1.000            0           .
        male |   4.336104   1.058013     6.01   0.000     2.687855    6.995094
      tenure |   1.043774   .0138433     3.23   0.001     1.016991    1.071262
         age |   1.018502   .0155878     1.20   0.231     .9884045    1.049517
------------------------------------------------------------------------------


---------->  region = 6

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -683.55425
Iteration 1:   log likelihood = -659.22975
Iteration 2:   log likelihood = -658.44229
Iteration 3:   log likelihood = -658.28957
Iteration 4:   log likelihood = -658.25562
Iteration 5:   log likelihood = -658.24723
Iteration 6:   log likelihood = -658.24561
Iteration 7:   log likelihood = -658.24535
Iteration 8:   log likelihood = -658.24528
Iteration 9:   log likelihood = -658.24527

Multinomial logistic regression                 Number of obs   =        659
                                                LR chi2(20)     =      50.62
                                                Prob > chi2     =     0.0002
```

```
Log likelihood = -658.24527                     Pseudo R2       =     0.0370

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   5.01e-07   .0010516    -0.01   0.994           0           .
       Black |    .700127   .4095901    -0.61   0.542     .2224358    2.203682
      Latino |    .768678   .8956938    -0.23   0.821     .0783233    7.543935
       Other |   1.01e-06   .0021235    -0.01   0.995           0           .
   AsianMale |  (omitted)
   BlackMale |    3.57158    2.82996     1.61   0.108     .7557994    16.87774
  LatinoMale |   5.359191   9.146438     0.98   0.325     .1889594    151.9953
   OtherMale |   795372.6   3.57e+09     0.00   0.998           0           .
        male |   1.392944   .3019746     1.53   0.126     .9107571    2.130416
      tenure |   1.007788   .0135881     0.58   0.565     .9815051    1.034776
         age |   .9747866   .0137282    -1.81   0.070     .9482478    1.002068
-------------+----------------------------------------------------------------
3            |
       Asian |   9.06e-07   .0017049    -0.01   0.994           0           .
       Black |   .6284397   .4105501    -0.71   0.477     .1746573    2.261208
      Latino |   1.63e-06   .0013214    -0.02   0.987           0           .
       Other |   5.13e-07   .0009644    -0.01   0.994           0           .
   AsianMale |  (omitted)
   BlackMale |   1.406311   1.227537     0.39   0.696     .2541482    7.781727
  LatinoMale |     601401   4.86e+08     0.02   0.987           0           .
   OtherMale |   1.08e+13   3.13e+16     0.01   0.992           0           .
        male |   2.514214   .5001077     4.64   0.000     1.702503    3.712928
      tenure |   .9993434   .0118347    -0.06   0.956     .9764149     1.02281
         age |   1.022028   .0131743     1.69   0.091     .9965301    1.048178
------------------------------------------------------------------------------


---------->  region = 7

Iteration 0:   log likelihood = -971.46592
Iteration 1:   log likelihood = -920.52062
Iteration 2:   log likelihood = -911.82877
Iteration 3:   log likelihood = -911.45247
Iteration 4:   log likelihood = -911.37634
Iteration 5:   log likelihood = -911.35775
Iteration 6:   log likelihood = -911.35383
Iteration 7:   log likelihood = -911.35301
Iteration 8:   log likelihood = -911.35282
Iteration 9:   log likelihood = -911.35277
Iteration 10:  log likelihood = -911.35277

Multinomial logistic regression                 Number of obs   =       1039
                                                LR chi2(22)     =     120.23
                                                Prob > chi2     =     0.0000
Log likelihood = -911.35277                     Pseudo R2       =     0.0619

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   4.20e+09   7.00e+13     0.00   0.999           0           .
       Black |   1.286962   .6155912     0.53   0.598     .5039774    3.286397
      Latino |   1.85e-06   .0022367    -0.01   0.991           0           .
       Other |   8.92e-07   .0017242    -0.01   0.994           0           .
   AsianMale |   .0068013   114.4989    -0.00   1.000           0           .
   BlackMale |   2.644911     1.5315     1.68   0.093     .8502257    8.227879
  LatinoMale |   .3882057    888.739    -0.00   1.000           0           .
```

```
   OtherMale |    3951947   7.64e+09     0.01   0.994           0           .
        male |   3.748937   .9315542     5.32   0.000     2.303548     6.10125
      tenure |   1.010853   .0140275     0.78   0.437     .9837296    1.038723
         age |   .9700838   .0140796    -2.09   0.036     .9428771    .9980756
-------------+----------------------------------------------------------------
3            |
       Asian |   1.132691   32155.97     0.00   1.000           0           .
       Black |   .8370311   .2657075    -0.56   0.575     .4492994    1.559363
      Latino |   .6127755    .676787    -0.44   0.657     .0703367     5.33852
       Other |   7.31e-07   .0008994    -0.01   0.991           0           .
   AsianMale |    5220043   1.49e+11     0.00   1.000           0           .
   BlackMale |   .9578056   .4475179    -0.09   0.926     .3833261    2.393241
  LatinoMale |   3.897043   6.458844     0.82   0.412     .1513487    100.3441
   OtherMale |    1764774   2.17e+09     0.01   0.991           0           .
        male |   2.629611   .4096864     6.21   0.000     1.937656    3.568671
      tenure |   1.009357   .0093885     1.00   0.317     .9911225    1.027927
         age |   1.007686   .0100172     0.77   0.441     .9882427    1.027512
------------------------------------------------------------------------------


--------->  region = 8

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -294.34991
Iteration 1:   log likelihood = -272.24126
Iteration 2:   log likelihood =  -270.6555
Iteration 3:   log likelihood = -270.46275
Iteration 4:   log likelihood = -270.43085
Iteration 5:   log likelihood = -270.42365
Iteration 6:   log likelihood = -270.42188
Iteration 7:   log likelihood = -270.42152
Iteration 8:   log likelihood = -270.42145
Iteration 9:   log likelihood = -270.42143

Multinomial logistic regression                 Number of obs   =        307
                                                LR chi2(18)     =      47.86
                                                Prob > chi2     =     0.0002
Log likelihood = -270.42143                     Pseudo R2       =     0.0813

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   3.62e-07   .0010222    -0.01   0.996           0           .
       Black |   3.503132   4.255445     1.03   0.302     .3239332    37.88414
      Latino |   2.78e-06   .0055425    -0.01   0.995           0           .
       Other |   2.45e-06   .0048929    -0.01   0.995           0           .
   AsianMale |  (omitted)
   BlackMale |   .8811255   1.238198    -0.09   0.928     .0560907    13.84155
  LatinoMale |   .1127487   390.0413    -0.00   0.999           0           .
   OtherMale |  (omitted)
        male |   7.630241   4.305855     3.60   0.000     2.524602    23.06129
      tenure |   1.016699   .0250892     0.67   0.502     .9686955    1.067082
         age |   1.008589   .0260754     0.33   0.741     .9587558    1.061013
-------------+----------------------------------------------------------------
3            |
       Asian |   3.79e-07   .0006103    -0.01   0.993           0           .
       Black |   1.618029   1.250964     0.62   0.534     .3555394    7.363508
      Latino |   1.62e-06   .0018455    -0.01   0.991           0           .
       Other |   1.06e-06   .0012009    -0.01   0.990           0           .
   AsianMale |  (omitted)
   BlackMale |   .9235449   .9326835    -0.08   0.937      .127595    6.684706
  LatinoMale |   .2659124   523.9912    -0.00   0.999           0           .
   OtherMale |  (omitted)
```

```
        male |   3.405279   .9716863     4.29   0.000     1.946547    5.957178
      tenure |   1.032157   .0177999     1.84   0.066     .9978525     1.06764
         age |    .989381   .0176199    -0.60   0.549     .9554424    1.024525
------------------------------------------------------------------------------


--------->  region = 9

note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -218.72699
Iteration 1:   log likelihood = -202.29017
Iteration 2:   log likelihood =  -201.8171
Iteration 3:   log likelihood = -201.73043
Iteration 4:   log likelihood = -201.71224
Iteration 5:   log likelihood = -201.70918
Iteration 6:   log likelihood = -201.70846
Iteration 7:   log likelihood =  -201.7083
Iteration 8:   log likelihood = -201.70826
Iteration 9:   log likelihood = -201.70826

Multinomial logistic regression                 Number of obs   =        221
                                                LR chi2(16)     =      34.04
                                                Prob > chi2     =     0.0054
Log likelihood = -201.70826                     Pseudo R2       =     0.0778

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   1.67e-07   .0008939    -0.00   0.998            0           .
       Black |   2.807724   4.197322     0.69   0.490     .1499259    52.58142
      Latino |   .3401698   2227.883    -0.00   1.000            0           .
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   2.80e-08   .0000833    -0.01   0.995            0           .
  LatinoMale |   7.38e+09   2.22e+14     0.00   0.999            0           .
   OtherMale |  (omitted)
        male |   1.715926   .8002927     1.16   0.247     .6878686     4.28047
      tenure |   1.039225   .0305446     1.31   0.191     .9810501    1.100849
         age |   1.025923   .0363723     0.72   0.470     .9570547    1.099746
-------------+----------------------------------------------------------------
3            |
       Asian |   2.33e-07   .0007054    -0.01   0.996            0           .
       Black |   2.708507   3.507507     0.77   0.442     .2140065    34.27938
      Latino |    6601108   2.04e+10     0.01   0.996            0           .
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   2.28e-08   .0000386    -0.01   0.992            0           .
  LatinoMale |   9.02e-08   .0038625    -0.00   1.000            0           .
   OtherMale |  (omitted)
        male |   2.749708   .9126798     3.05   0.002     1.434686     5.27007
      tenure |   1.005202   .0201715     0.26   0.796     .9664343    1.045526
         age |   1.060549   .0256001     2.44   0.015     1.011542     1.11193
------------------------------------------------------------------------------


--------->  region = 10

Iteration 0:   log likelihood = -2713.0213
Iteration 1:   log likelihood = -2607.7513
Iteration 2:   log likelihood = -2606.2205
Iteration 3:   log likelihood = -2605.9578
Iteration 4:   log likelihood = -2605.9004
```

```
Iteration 5:   log likelihood = -2605.8867
Iteration 6:   log likelihood = -2605.8838
Iteration 7:   log likelihood = -2605.8832
Iteration 8:   log likelihood = -2605.8831
Iteration 9:   log likelihood =  -2605.883
Iteration 10:  log likelihood =  -2605.883

Multinomial logistic regression                 Number of obs   =       2651
                                                LR chi2(22)     =     214.28
                                                Prob > chi2     =     0.0000
Log likelihood =  -2605.883                     Pseudo R2       =     0.0395

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   .3631945   .3883837    -0.95   0.344     .0446584    2.953762
       Black |   1.442045    .231266     2.28   0.022     1.053098    1.974646
      Latino |    2.38186   .6626176     3.12   0.002     1.380759    4.108799
       Other |   .6566632   .5091652    -0.54   0.588       .14366    3.001578
   AsianMale |   2.865885   3.301887     0.91   0.361     .2996123    27.41308
   BlackMale |   1.066208   .2851732     0.24   0.811      .631212    1.800978
  LatinoMale |   .8150418   .3500486    -0.48   0.634     .3512377    1.891292
   OtherMale |   .4395535    .583565    -0.62   0.536     .0325784    5.930532
        male |   1.893183   .2267132     5.33   0.000     1.497129     2.39401
      tenure |   1.032916   .0072859     4.59   0.000     1.018734    1.047295
         age |   .9687848   .0067974    -4.52   0.000     .9555533    .9821995
-------------+----------------------------------------------------------------
3            |
       Asian |   .7389403   .4415959    -0.51   0.613     .2290473     2.38393
       Black |   .8507456   .1479999    -0.93   0.353     .6049515    1.196407
      Latino |   2.326537    .629773     3.12   0.002     1.368665    3.954783
       Other |   3.84e-07    .000313    -0.02   0.986            0           .
   AsianMale |   .8330715   .5937934    -0.26   0.798      .206047    3.368203
   BlackMale |   1.140786   .3228435     0.47   0.642     .6551084    1.986529
  LatinoMale |   .6745708   .2884772    -0.92   0.357     .2917527    1.559697
   OtherMale |    2808477   2.29e+09     0.02   0.985            0           .
        male |   1.923829   .2150974     5.85   0.000     1.545241    2.395172
      tenure |   1.053934   .0068924     8.03   0.000     1.040511     1.06753
         age |    1.00058   .0066705     0.09   0.931     .9875907    1.013739
------------------------------------------------------------------------------


---------->  region = 11

Iteration 0:   log likelihood = -1883.7931
Iteration 1:   log likelihood = -1757.7272
Iteration 2:   log likelihood = -1753.5068
Iteration 3:   log likelihood = -1753.3304
Iteration 4:   log likelihood = -1753.2896
Iteration 5:   log likelihood = -1753.2808
Iteration 6:   log likelihood = -1753.2788
Iteration 7:   log likelihood = -1753.2784
Iteration 8:   log likelihood = -1753.2784
Iteration 9:   log likelihood = -1753.2784

Multinomial logistic regression                 Number of obs   =       1782
                                                LR chi2(22)     =     261.03
                                                Prob > chi2     =     0.0000
Log likelihood = -1753.2784                     Pseudo R2       =     0.0693

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
```

```
-------------+----------------------------------------------------------------
2            |
       Asian |   2.84e-07    .000455    -0.01   0.992           0           .
       Black |   1.717036   .4715758     1.97   0.049     1.002307    2.941425
      Latino |   1.666111   .5818015     1.46   0.144     .8403625    3.303248
       Other |   .9661161   1.202898    -0.03   0.978     .0841802    11.08788
   AsianMale |   1.32e+14   5.66e+17     0.01   0.994           0           .
   BlackMale |   1.343951   .5695535     0.70   0.485      .585669       3.084
  LatinoMale |   1.195013   .6565977     0.32   0.746     .4070816    3.508034
   OtherMale |    .693187    1.21788    -0.21   0.835     .0221488    21.69455
        male |   1.119826   .1531211     0.83   0.408      .856565    1.463999
      tenure |   .9173739   .0081133    -9.75   0.000     .9016092    .9334143
         age |   .9797568   .0081274    -2.47   0.014     .9639561    .9958164
-------------+----------------------------------------------------------------
3            |
       Asian |   4.70e-07   .0007561    -0.01   0.993           0           .
       Black |   1.655665   .4733062     1.76   0.078     .9454507    2.899386
      Latino |   1.678148    .635049     1.37   0.171      .799312    3.523255
       Other |   7.94e-07   .0009138    -0.01   0.990           0           .
   AsianMale |    1010140   6.85e+09     0.00   0.998           0           .
   BlackMale |   .3542065   .1731137    -2.12   0.034     .1359074     .923145
  LatinoMale |   .6030018   .3591971    -0.85   0.396     .1876176    1.938044
   OtherMale |    1203214   1.38e+09     0.01   0.990           0           .
        male |   1.860319   .2332692     4.95   0.000     1.454969      2.3786
      tenure |   .9578631   .0067091    -6.15   0.000     .9448034    .9711033
         age |   1.042624   .0083829     5.19   0.000     1.026322    1.059184
------------------------------------------------------------------------------


--------->  region = 12

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -690.34259
Iteration 1:   log likelihood = -659.62891
Iteration 2:   log likelihood =  -657.3714
Iteration 3:   log likelihood = -656.25536
Iteration 4:   log likelihood = -656.16597
Iteration 5:   log likelihood = -656.15101
Iteration 6:   log likelihood = -656.14752
Iteration 7:   log likelihood = -656.14675
Iteration 8:   log likelihood =  -656.1466
Iteration 9:   log likelihood = -656.14656
Iteration 10:  log likelihood = -656.14655

Multinomial logistic regression                 Number of obs   =        687
                                                LR chi2(18)     =      68.39
                                                Prob > chi2     =     0.0000
Log likelihood = -656.14655                     Pseudo R2       =     0.0495

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   6.380289   7.933526     1.49   0.136     .5577244    72.98961
       Black |   1.940872   .8697708     1.48   0.139     .8063887    4.671424
      Latino |   7.58e-07   .0007682    -0.01   0.989           0           .
       Other |   1.94e+08   1.69e+12     0.00   0.998           0           .
   AsianMale |  (omitted)
   BlackMale |   2.118565   1.425393     1.12   0.264     .5666884    7.920256
  LatinoMale |    6190887   6.27e+09     0.02   0.988           0           .
   OtherMale |  (omitted)
        male |   1.221074   .2993604     0.81   0.415      .755197    1.974349
      tenure |   1.005884   .0150586     0.39   0.695     .9767985    1.035836
         age |   .9801191   .0151416    -1.30   0.194     .9508868     1.01025
```

```
-------------+----------------------------------------------------------------
3            |
       Asian |   6.64e-08   .0002533    -0.00   0.997           0           .
       Black |   1.714289   .7006099     1.32   0.187     .7694985    3.819092
      Latino |    2.27264   1.570759     1.19   0.235     .5864266    8.807398
       Other |   .8484396   11774.89    -0.00   1.000           0           .
   AsianMale |  (omitted)
   BlackMale |   .6251861   .4029873    -0.73   0.466     .1767401    2.211482
  LatinoMale |   7.21e-08   .0001063    -0.01   0.991           0           .
   OtherMale |  (omitted)
        male |   2.715471   .5235775     5.18   0.000     1.860898    3.962486
      tenure |    1.01556   .0114633     1.37   0.171     .9933387    1.038278
         age |   1.012243   .0120855     1.02   0.308      .988831     1.03621
------------------------------------------------------------------------------


--------->  region = 13

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1105.2241
Iteration 1:   log likelihood = -1084.0481
Iteration 2:   log likelihood = -1083.5849
Iteration 3:   log likelihood = -1083.4899
Iteration 4:   log likelihood = -1083.4682
Iteration 5:   log likelihood = -1083.4637
Iteration 6:   log likelihood =  -1083.463
Iteration 7:   log likelihood = -1083.4629
Iteration 8:   log likelihood = -1083.4629

Multinomial logistic regression                 Number of obs   =       1031
                                                LR chi2(18)     =      43.52
                                                Prob > chi2     =     0.0007
Log likelihood = -1083.4629                     Pseudo R2       =     0.0197

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   1.870269    .674126     1.74   0.082     .9227713    3.790653
      Latino |   2.102091   .6476108     2.41   0.016     1.149248    3.844936
       Other |   4.40e-06   .0038672    -0.01   0.989           0           .
   AsianMale |  (omitted)
   BlackMale |   1.352766   .8376953     0.49   0.626     .4019014    4.553298
  LatinoMale |   .7598421    .355185    -0.59   0.557     .3039714    1.899389
   OtherMale |   212775.5   1.87e+08     0.01   0.989           0           .
        male |   1.456169   .2666453     2.05   0.040     1.017055     2.08487
      tenure |   1.024396   .0122725     2.01   0.044     1.000622    1.048734
         age |   .9726505   .0113922    -2.37   0.018     .9505766    .9952369
-------------+----------------------------------------------------------------
3            |
       Asian |  (omitted)
       Black |   1.386359   .5014782     0.90   0.366     .6823019    2.816924
      Latino |   1.603349   .4911623     1.54   0.123     .8795794    2.922679
       Other |   1.801116   2.567435     0.41   0.680     .1101996    29.43765
   AsianMale |  (omitted)
   BlackMale |   1.718552   1.031835     0.90   0.367     .5297776    5.574834
  LatinoMale |   .6162818   .2912129    -1.02   0.306     .2440952    1.555963
   OtherMale |   7.21e-07   .0004671    -0.02   0.983           0           .
        male |   1.510806   .2490695     2.50   0.012     1.093656    2.087068
      tenure |   1.021958   .0110195     2.01   0.044     1.000586    1.043785
         age |    1.00644   .0106852     0.60   0.545     .9857135    1.027602
------------------------------------------------------------------------------
```

```
---------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -276.77506
Iteration 1:   log likelihood = -259.38687
Iteration 2:   log likelihood = -257.21454
Iteration 3:   log likelihood =  -256.5753
Iteration 4:   log likelihood = -256.43785
Iteration 5:   log likelihood = -256.40397
Iteration 6:   log likelihood = -256.39741
Iteration 7:   log likelihood =  -256.3963
Iteration 8:   log likelihood = -256.39604
Iteration 9:   log likelihood = -256.39598
Iteration 10:  log likelihood = -256.39597

Multinomial logistic regression                 Number of obs   =        286
                                                LR chi2(18)     =      40.76
                                                Prob > chi2     =     0.0016
Log likelihood = -256.39597                     Pseudo R2       =     0.0736

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   6.494237   9.740987     1.25   0.212     .3433793    122.8237
      Latino |   1.66e-07   .0006985    -0.00   0.997            0           .
       Other |   6.06e-07   .0024901    -0.00   0.997            0           .
   AsianMale |  (omitted)
   BlackMale |   .1003097   530.7418    -0.00   1.000            0           .
  LatinoMale |   1.78e+14   8.36e+17     0.01   0.994            0           .
   OtherMale |   .2440592   1405.692    -0.00   1.000            0           .
        male |   1.688023   .7142765     1.24   0.216     .7365425    3.868647
      tenure |   1.029223   .0291674     1.02   0.309     .9736146    1.088008
         age |   .9316668   .0298298    -2.21   0.027     .8749981    .9920055
-------------+----------------------------------------------------------------
3            |
       Asian |  (omitted)
       Black |   4.33e-08   .0003321    -0.00   0.998            0           .
      Latino |   1.59e-07   .0003673    -0.01   0.995            0           .
       Other |   2.619669   3.777086     0.67   0.504     .1552276    44.21036
   AsianMale |  (omitted)
   BlackMale |   3.31e+14   2.65e+18     0.00   0.997            0           .
  LatinoMale |   6.70e+13   2.10e+17     0.01   0.992            0           .
   OtherMale |   .3380447   .6916386    -0.53   0.596     .0061294    18.64363
        male |   2.779554   .7886317     3.60   0.000     1.593922    4.847113
      tenure |   .9945262   .0171545    -0.32   0.750      .961466    1.028723
         age |   .9894551   .0196884    -0.53   0.594     .9516094    1.028806
------------------------------------------------------------------------------


---------->  region = 15

note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -279.27809
Iteration 1:   log likelihood = -261.94179
Iteration 2:   log likelihood = -259.93432
Iteration 3:   log likelihood = -259.87313
Iteration 4:   log likelihood =  -259.8633
Iteration 5:   log likelihood = -259.86103
```

```
Iteration 6:   log likelihood =  -259.8605
Iteration 7:   log likelihood = -259.86039
Iteration 8:   log likelihood = -259.86037

Multinomial logistic regression                 Number of obs   =        298
                                                LR chi2(14)     =      38.84
                                                Prob > chi2     =     0.0004
Log likelihood = -259.86037                     Pseudo R2       =     0.0695

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   3.46e-06   .0070002    -0.01   0.995            0           .
       Black |   2.683234   6890.184     0.00   1.000            0           .
      Latino |   7.281147   5.476246     2.64   0.008     1.667247    31.79799
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |     .29734   .2725137    -1.32   0.186     .0493313     1.79219
   OtherMale |  (omitted)
        male |   2.478906   1.411639     1.59   0.111     .8119597    7.568081
      tenure |   1.023673   .0296894     0.81   0.420      .967106    1.083549
         age |      .9908   .0317982    -0.29   0.773     .9303964    1.055125
-------------+----------------------------------------------------------------
3            |
       Asian |   4.43e-06   .0044645    -0.01   0.990            0           .
       Black |    2939203   3.02e+09     0.01   0.988            0           .
      Latino |   1.799505   1.132625     0.93   0.351     .5240815    6.178843
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   .2920756   .2188513    -1.64   0.100     .0672501    1.268522
   OtherMale |  (omitted)
        male |   3.670855   1.097485     4.35   0.000      2.04306    6.595583
      tenure |    1.00649   .0169726     0.38   0.701     .9737675    1.040311
         age |   1.019377    .018616     1.05   0.293     .9835353    1.056524
------------------------------------------------------------------------------


---------->  region = 16

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -421.18555
Iteration 1:   log likelihood = -404.72805
Iteration 2:   log likelihood = -404.07242
Iteration 3:   log likelihood = -403.93667
Iteration 4:   log likelihood = -403.90462
Iteration 5:   log likelihood = -403.89822
Iteration 6:   log likelihood = -403.89706
Iteration 7:   log likelihood = -403.89694
Iteration 8:   log likelihood = -403.89692

Multinomial logistic regression                 Number of obs   =        402
                                                LR chi2(18)     =      34.58
                                                Prob > chi2     =     0.0107
Log likelihood = -403.89692                     Pseudo R2       =     0.0410

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
       Asian |  (omitted)
       Black |   4.142282    4.62752     1.27   0.203      .463795    36.99587
```

```
      Latino |   .6843826   .7026336    -0.37   0.712     .0914951    5.119178
       Other |    1633929   1.40e+09     0.02   0.987            0           .
   AsianMale |  (omitted)
   BlackMale |   .6907376   4294.559    -0.00   1.000            0           .
  LatinoMale |    1.78741    2.57597     0.40   0.687      .106046    30.12689
   OtherMale |   2.427575   3281.663     0.00   0.999            0           .
        male |   .5140659   .1252885    -2.73   0.006     .3188331    .8288467
      tenure |   .9702988   .0147324    -1.99   0.047     .9418491    .9996078
         age |   .9940354   .0161192    -0.37   0.712     .9629392    1.026136
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   3.935882   4.932571     1.09   0.274     .3375123    45.89809
      Latino |   1.74e-06   .0012668    -0.02   0.985            0           .
       Other |   1.094033    1677.02     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   1.56e+07   6.68e+10     0.00   0.997            0           .
  LatinoMale |    1171211   8.53e+08     0.02   0.985            0           .
   OtherMale |   1.067143   2594.788     0.00   1.000            0           .
        male |   .8667342   .2638938    -0.47   0.639      .477223    1.574166
      tenure |   .9999982   .0183308    -0.00   1.000     .9647081    1.036579
         age |   .9795933   .0198325    -1.02   0.308     .9414835    1.019246
-------------+----------------------------------------------------------------
3            |  (base outcome)
------------------------------------------------------------------------------


--------->  region = 17

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -410.96404
Iteration 1:   log likelihood = -391.61195
Iteration 2:   log likelihood = -390.51416
Iteration 3:   log likelihood = -390.29486
Iteration 4:   log likelihood = -390.24158
Iteration 5:   log likelihood = -390.23117
Iteration 6:   log likelihood = -390.22933
Iteration 7:   log likelihood = -390.22914
Iteration 8:   log likelihood =  -390.2291
Iteration 9:   log likelihood = -390.22909

Multinomial logistic regression                 Number of obs   =        414
                                                LR chi2(18)     =      41.47
                                                Prob > chi2     =     0.0013
Log likelihood = -390.22909                     Pseudo R2       =     0.0505

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
       Asian |  (omitted)
       Black |   .2636465   .2295038    -1.53   0.126     .0478688    1.452083
      Latino |   .8044571   .5480822    -0.32   0.749     .2116281    3.057964
       Other |   .5013226    .718584    -0.48   0.630     .0302013     8.32165
   AsianMale |  (omitted)
   BlackMale |   1.35e-06   .0018379    -0.01   0.992            0           .
  LatinoMale |   .8542028   .7534099    -0.18   0.858     .1516346    4.811979
   OtherMale |   5.224821   9.882426     0.87   0.382     .1282556    212.8464
        male |   .3865911   .0936736    -3.92   0.000     .2404363    .6215896
      tenure |   .9800204   .0141318    -1.40   0.162     .9527104    1.008113
         age |   .9954624   .0159444    -0.28   0.776     .9646974    1.027208
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   1.008949   1.174771     0.01   0.994     .1029847    9.884761
      Latino |   7.18e-07   .0007273    -0.01   0.989            0           .
```

```
       Other |   7.39e-07   .0016475    -0.01   0.995           0           .
   AsianMale |  (omitted)
   BlackMale |   2.63e-07   .0006278    -0.01   0.995           0           .
  LatinoMale |    2357181   2.39e+09     0.01   0.988           0           .
   OtherMale |   1.327548   3876.656     0.00   1.000           0           .
        male |   1.085859   .4149959     0.22   0.829    .5134043    2.296611
      tenure |   .9927626       .021    -0.34   0.731     .952445    1.034787
         age |   .9671903   .0225345    -1.43   0.152    .9240166    1.012381
-------------+----------------------------------------------------------------
3            |  (base outcome)
------------------------------------------------------------------------------


--------->  region = 18

note: Asian omitted because of collinearity
note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -395.09289
Iteration 1:   log likelihood = -382.84209
Iteration 2:   log likelihood = -381.44942
Iteration 3:   log likelihood = -380.90804
Iteration 4:   log likelihood = -380.87727
Iteration 5:   log likelihood = -380.87421
Iteration 6:   log likelihood = -380.87351
Iteration 7:   log likelihood = -380.87336
Iteration 8:   log likelihood = -380.87333

Multinomial logistic regression                 Number of obs   =        407
                                                LR chi2(14)     =      28.44
                                                Prob > chi2     =     0.0124
Log likelihood = -380.87333                     Pseudo R2       =     0.0360

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |  (omitted)
       Black |   6.166182   9.087996     1.23   0.217     .3431446     110.804
      Latino |   2.655416   2.047757     1.27   0.205     .5857578     12.0378
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   427514.2   2.40e+08     0.02   0.982           0           .
  LatinoMale |    .773468    .702105    -0.28   0.777     .1305497    4.582568
   OtherMale |  (omitted)
        male |   2.065324   .8751731     1.71   0.087     .9001083    4.738944
      tenure |   1.041241    .023968     1.76   0.079     .9953085    1.089293
         age |    .933449   .0274174    -2.34   0.019     .8812293    .9887631
-------------+----------------------------------------------------------------
3            |
       Asian |  (omitted)
       Black |   3.337636   4.161978     0.97   0.334     .2897373    38.44798
      Latino |   2.093356   1.107761     1.40   0.163     .7420015    5.905838
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   207560.9   1.16e+08     0.02   0.983           0           .
  LatinoMale |   .4579876   .3033755    -1.18   0.238     .1250286    1.677637
   OtherMale |  (omitted)
        male |   1.773215   .4436631     2.29   0.022     1.085896    2.895571
      tenure |   1.021095   .0138287     1.54   0.123     .9943479    1.048562
         age |   .9736239   .0168299    -1.55   0.122     .9411904    1.007175
------------------------------------------------------------------------------
```

```
---------> region = 19

Iteration 0:   log likelihood = -679.29815
Iteration 1:   log likelihood = -642.46167
Iteration 2:   log likelihood = -641.62958
Iteration 3:   log likelihood =  -641.5068
Iteration 4:   log likelihood = -641.48505
Iteration 5:   log likelihood = -641.48294
Iteration 6:   log likelihood = -641.48249
Iteration 7:   log likelihood = -641.48239
Iteration 8:   log likelihood = -641.48237

Multinomial logistic regression                 Number of obs   =        638
                                                LR chi2(22)     =      75.63
                                                Prob > chi2     =     0.0000
Log likelihood = -641.48237                     Pseudo R2       =     0.0557

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   1.28e-06   .0013731    -0.01   0.990            0           .
       Black |   .9434117   .5695173    -0.10   0.923     .2889677    3.080018
      Latino |   1.315695   .3662578     0.99   0.324     .7624322    2.270436
       Other |   2.05e-06   .0021878    -0.01   0.990            0           .
   AsianMale |   1.26e+12   1.68e+15     0.02   0.983            0           .
   BlackMale |   1.107405   1.070093     0.11   0.916     .1666418    7.359169
  LatinoMale |    1.28327   .4979223     0.64   0.520     .5998499    2.745321
   OtherMale |   322010.7   9.11e+08     0.00   0.996            0           .
        male |   1.205691   .3129253     0.72   0.471      .724962    2.005197
      tenure |   1.043733   .0127116     3.51   0.000     1.019114    1.068947
         age |   .9721918   .0129112    -2.12   0.034     .9472128    .9978295
-------------+----------------------------------------------------------------
3            |
       Asian |   1.32e-06   .0016667    -0.01   0.991            0           .
       Black |   .3448872   .2864341    -1.28   0.200     .0677237    1.756358
      Latino |   1.532369   .4743196     1.38   0.168     .8353874    2.810857
       Other |   1.90e-06   .0024091    -0.01   0.992            0           .
   AsianMale |   751385.7   1.40e+09     0.01   0.994            0           .
   BlackMale |   4.208451    4.79074     1.26   0.207     .4520088    39.18299
  LatinoMale |    1.03484   .4539416     0.08   0.938     .4380125    2.444895
   OtherMale |   1.11e+12   2.35e+15     0.01   0.990            0           .
        male |   1.189189   .3534185     0.58   0.560     .6641708    2.129227
      tenure |   1.095157   .0158478     6.28   0.000     1.064533    1.126663
         age |   .9816698   .0153933    -1.18   0.238     .9519584    1.012308
------------------------------------------------------------------------------


---------> region = 20

Iteration 0:   log likelihood = -1876.0007
Iteration 1:   log likelihood = -1788.6881
Iteration 2:   log likelihood = -1785.8574
Iteration 3:   log likelihood = -1785.4628
Iteration 4:   log likelihood = -1785.3949
Iteration 5:   log likelihood = -1785.3797
Iteration 6:   log likelihood =  -1785.376
Iteration 7:   log likelihood = -1785.3752
Iteration 8:   log likelihood = -1785.3751
Iteration 9:   log likelihood =  -1785.375
Iteration 10:  log likelihood =  -1785.375

Multinomial logistic regression                 Number of obs   =       1939
                                                LR chi2(22)     =     181.25
                                                Prob > chi2     =     0.0000
```

```
Log likelihood =  -1785.375                       Pseudo R2       =     0.0483

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
       Asian |   5.07e-07   .0005639    -0.01   0.990            0           .
       Black |   1.353485   .4098955     1.00   0.318      .7476041     2.45039
      Latino |   .8686935   .1588677    -0.77   0.441      .6070128    1.243184
       Other |   4.09e-07    .000565    -0.01   0.992            0           .
   AsianMale |   .8979386    2529.12    -0.00   1.000            0           .
   BlackMale |    1.73026   .7935424     1.20   0.232      .7042518    4.251034
  LatinoMale |   1.855904   .4949231     2.32   0.020      1.100427    3.130038
   OtherMale |    5006401   6.92e+09     0.01   0.991            0           .
        male |   1.538661   .2329411     2.85   0.004       1.14361     2.07018
      tenure |   1.009658   .0086244     1.13   0.260      .9928956    1.026704
         age |   .9719337   .0083611    -3.31   0.001      .9556836    .9884602
-------------+----------------------------------------------------------------
3            |
       Asian |   1.456071   1.250392     0.44   0.662       .270532    7.836942
       Black |   1.032746   .3331592     0.10   0.920      .5487818    1.943512
      Latino |   .9636852   .1807697    -0.20   0.844      .6672144     1.39189
       Other |   1.371935   1.554294     0.28   0.780      .1489323    12.63799
   AsianMale |   1.807262   3.013919     0.35   0.723      .0687855    47.48379
   BlackMale |   .7744493   .4137723    -0.48   0.632      .2717775    2.206848
  LatinoMale |   1.343646   .3642787     1.09   0.276      .7897938    2.285893
   OtherMale |   4.21e-07   .0005337    -0.01   0.991            0           .
        male |   1.796452   .2737374     3.84   0.000      1.332639    2.421692
      tenure |   1.071262   .0090685     8.13   0.000      1.053635    1.089185
         age |   .9929214   .0089002    -0.79   0.428      .9756297     1.01052
------------------------------------------------------------------------------
```

1993-94

```
. mlogit admin  male age  tenure Asian Black Latino Other AsianMale BlackMale LatinoMale
OtherMale, rrr iter(20)

Iteration 0:   log likelihood = -49681.853
Iteration 1:   log likelihood = -47672.742
Iteration 2:   log likelihood = -44782.943
Iteration 3:   log likelihood = -44729.501
Iteration 4:   log likelihood = -44728.791
Iteration 5:   log likelihood = -44728.791

Multinomial logistic regression                 Number of obs   =     235571
                                                LR chi2(22)     =    9906.12
                                                Prob > chi2     =     0.0000
Log likelihood = -44728.791                     Pseudo R2       =     0.0997

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   3.609767   .1331056    34.81   0.000      3.358089    3.880308
         age |    1.02621   .0019514    13.61   0.000      1.022393    1.030042
      tenure |   1.035073   .0021275    16.77   0.000      1.030911    1.039251
       Asian |   .2529606   .1137137    -3.06   0.002      .1048121    .6105124
       Black |   1.764954   .1083533     9.25   0.000      1.564865    1.990627
      Latino |   1.572002   .0902386     7.88   0.000      1.404724    1.759199
       Other |   .4136209   .1470589    -2.48   0.013      .2060468    .8303076
   AsianMale |   2.935123    1.52177     2.08   0.038      1.062441    8.108639
   BlackMale |   1.132055   .1010257     1.39   0.165      .9503974    1.348433
  LatinoMale |    .957656     .07547    -0.55   0.583       .820595     1.11761
```

```
   OtherMale |   1.796656   .8295576     1.27   0.204     .7268513    4.441037
-------------+----------------------------------------------------------------
3            |
        male |   4.926821   .1563489    50.25   0.000     4.629718    5.242989
         age |   1.048783   .0018281    27.33   0.000     1.045206    1.052372
      tenure |   1.054944   .0018329    30.78   0.000     1.051358    1.058543
       Asian |    .301407   .0966309    -3.74   0.000     .1607898    .5649996
       Black |   .9865679   .0664855    -0.20   0.841     .8644979    1.125875
      Latino |   1.520399   .0827874     7.69   0.000     1.366497    1.691634
       Other |   .2993705   .1137569    -3.17   0.002     .1421554    .6304556
   AsianMale |   1.376043   .5478087     0.80   0.423     .6306157    3.002611
   BlackMale |   .7809597   .0779421    -2.48   0.013     .6422086    .9496883
  LatinoMale |   .5875052   .0446815    -6.99   0.000     .5061454    .6819431
   OtherMale |   2.703563   1.205101     2.23   0.026     1.128541    6.476728
------------------------------------------------------------------------------

. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=235571)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
        male |   3490.464    2    0.000
         age |    864.031    2    0.000
      tenure |   1196.305    2    0.000
       Asian |     35.495    2    0.000
       Black |     76.513    2    0.000
      Latino |    109.081    2    0.000
       Other |     23.582    2    0.000
   AsianMale |      5.541    2    0.063
   BlackMale |      8.600    2    0.014
  LatinoMale |     48.540    2    0.000
   OtherMale |      7.139    2    0.028
---------------------------------------

**** Wald tests for independent variables (N=235571)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
        male |   3593.649    2    0.000
         age |    900.974    2    0.000
      tenure |   1166.918    2    0.000
       Asian |     23.107    2    0.000
       Black |     85.873    2    0.000
      Latino |    118.388    2    0.000
       Other |     16.145    2    0.000
   AsianMale |      4.865    2    0.088
   BlackMale |      8.581    2    0.014
  LatinoMale |     48.950    2    0.000
   OtherMale |      6.482    2    0.039
---------------------------------------

**** Hausman tests of IIA assumption (N=235571)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+----------------------------------
       2 |   -81.056   12     ---    ---
       3 |   158.973   12    0.000   against Ho
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.
```

```
**** Small-Hsiao tests of IIA assumption (N=235571)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+--------------------------------------------------------
       2 |  -1.18e+04  -1.18e+04  18.358   12    0.105   for Ho
       3 |  -1.05e+04  -1.05e+04   3.681   12    0.989   for Ho
-------------------------------------------------------------------

**** Wald tests for combining alternatives (N=235571)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  |  464.414   11    0.000
       2-       1  | 3366.448   11    0.000
       3-       1  | 6710.048   11    0.000
-------------------------------------------

**** LR tests for combining alternatives (N=235571)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  |  472.724   11    0.000
       2-       1  | 3232.772   11    0.000
       3-       1  | 6965.482   11    0.000
-------------------------------------------

by region


. bysort region: mlogit admin  male age  tenure Asian Black Latino Other AsianMale
BlackMale LatinoMale OtherMale, rrr iter(20)


---------->  region = 1

Iteration 0:   log likelihood = -3413.3027
Iteration 1:   log likelihood = -3323.8857
Iteration 2:   log likelihood = -3035.1848
Iteration 3:   log likelihood = -3029.2104
Iteration 4:   log likelihood = -3028.8133
Iteration 5:   log likelihood = -3028.7425
Iteration 6:   log likelihood = -3028.7266
Iteration 7:   log likelihood = -3028.7227
Iteration 8:   log likelihood = -3028.7219
Iteration 9:   log likelihood = -3028.7217
Iteration 10:  log likelihood = -3028.7217
Iteration 11:  log likelihood = -3028.7217

Multinomial logistic regression                 Number of obs   =      16781
                                                LR chi2(22)     =     769.16
                                                Prob > chi2     =     0.0000
Log likelihood = -3028.7217                     Pseudo R2       =     0.1127

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
```

```
2            |
        male |   3.158355   .7677962     4.73   0.000     1.961254    5.086137
         age |   1.026905   .0072343     3.77   0.000     1.012824    1.041182
      tenure |   1.045828   .0081895     5.72   0.000     1.029899    1.062003
       Asian |   5.84e-07   .0009563    -0.01   0.993            0           .
       Black |   5.63e-07   .0016124    -0.01   0.996            0           .
      Latino |   1.609949   .3408485     2.25   0.024     1.063165    2.437941
       Other |   5.24e-07    .001304    -0.01   0.995            0           .
   AsianMale |    .326052   1170.106    -0.00   1.000            0           .
   BlackMale |    2668378   7.64e+09     0.01   0.996            0           .
  LatinoMale |   1.214978   .3314985     0.71   0.475      .711744     2.07402
   OtherMale |    2090715   5.21e+09     0.01   0.995            0           .
-------------+----------------------------------------------------------------
3            |
        male |   .9884276   .2651874    -0.04   0.965      .584217    1.672305
         age |   1.036657   .0081158     4.60   0.000     1.020872    1.052687
      tenure |   1.092495   .0086065    11.23   0.000     1.075756    1.109494
       Asian |   7.84e-07   .0009744    -0.01   0.991            0           .
       Black |   7.09e-07   .0015481    -0.01   0.995            0           .
      Latino |    1.06237   .1877835     0.34   0.732     .7513082    1.502219
       Other |   5.52e-07   .0011402    -0.01   0.994            0           .
   AsianMale |   .8995535   2774.242    -0.00   1.000            0           .
   BlackMale |   .9462079   2915.231    -0.00   1.000            0           .
  LatinoMale |   2.934934   .8695455     3.63   0.000     1.642136    5.245507
   OtherMale |   1.26e+07   2.60e+10     0.01   0.994            0           .
------------------------------------------------------------------------------


---------> region = 2

Iteration 0:   log likelihood =  -1708.796
Iteration 1:   log likelihood = -1642.9812
Iteration 2:   log likelihood = -1534.5372
Iteration 3:   log likelihood = -1533.1376
Iteration 4:   log likelihood = -1533.0587
Iteration 5:   log likelihood = -1533.0422
Iteration 6:   log likelihood = -1533.0387
Iteration 7:   log likelihood = -1533.0379
Iteration 8:   log likelihood = -1533.0377
Iteration 9:   log likelihood = -1533.0377
Iteration 10:  log likelihood = -1533.0377

Multinomial logistic regression                 Number of obs   =       7562
                                                LR chi2(22)     =     351.52
                                                Prob > chi2     =     0.0000
Log likelihood = -1533.0377                     Pseudo R2       =     0.1029

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |     3.1572   .7420166     4.89   0.000     1.991818    5.004429
         age |    1.00257   .0118352     0.22   0.828     .9796398    1.026037
      tenure |    1.05913   .0127164     4.78   0.000     1.034497    1.084349
       Asian |   2.30e-06   .0060324    -0.00   0.996            0           .
       Black |   3.355884   1.812703     2.24   0.025     1.164193     9.67362
      Latino |   1.077921   .2745899     0.29   0.768     .6542614    1.775915
       Other |   4.510903   3.371412     2.02   0.044     1.042515    19.51842
   AsianMale |   .2312908   1003.876    -0.00   1.000            0           .
   BlackMale |   .7266306   .6048603    -0.38   0.701     .1421537    3.714233
  LatinoMale |   1.343191   .4710134     0.84   0.400      .675537    2.670708
   OtherMale |   .5916615   .7662892    -0.41   0.685     .0467349    7.490405
-------------+----------------------------------------------------------------
3            |
        male |   3.345195   .6756841     5.98   0.000     2.251595    4.969957
```

```
         age |   1.043133   .0099965     4.41   0.000     1.023723     1.06291
      tenure |   1.052504   .0098293     5.48   0.000     1.033414    1.071946
       Asian |   2.80e-06   .0058119    -0.01   0.995            0           .
       Black |   .6547913   .6676344    -0.42   0.678     .0887576    4.830588
      Latino |   1.483893    .311217     1.88   0.060     .9837393    2.238335
       Other |   1.98e-06   .0017718    -0.01   0.988            0           .
   AsianMale |   .1801658   578.9417    -0.00   1.000            0           .
   BlackMale |   3.633442   4.233791     1.11   0.268     .3702318    35.65847
  LatinoMale |   1.229433    .353602     0.72   0.473     .6996607    2.160341
   OtherMale |   .3119852   626.4301    -0.00   1.000            0           .
------------------------------------------------------------------------------


--------->  region = 3

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -834.05907
Iteration 1:   log likelihood = -813.00301
Iteration 2:   log likelihood = -723.31421
Iteration 3:   log likelihood = -720.74667
Iteration 4:   log likelihood = -720.33939
Iteration 5:   log likelihood = -720.26759
Iteration 6:   log likelihood = -720.24986
Iteration 7:   log likelihood = -720.24597
Iteration 8:   log likelihood = -720.24503
Iteration 9:   log likelihood = -720.24484
Iteration 10:  log likelihood = -720.24481

Multinomial logistic regression                 Number of obs   =       4025
                                                LR chi2(20)     =     227.63
                                                Prob > chi2     =     0.0000
Log likelihood = -720.24481                     Pseudo R2       =     0.1365

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   4.400319   1.437514     4.54   0.000     2.319584    8.347534
         age |   1.042522   .0180984     2.40   0.016     1.007647    1.078605
      tenure |    .978042   .0186917    -1.16   0.245     .9420846    1.015372
       Asian |   9.81e-07   .0050925    -0.00   0.998            0           .
       Black |   4.459956   2.549574     2.62   0.009     1.454567    13.67501
      Latino |   2.269943   1.433381     1.30   0.194     .6584368    7.825564
       Other |   6.83e-07   .0022092    -0.00   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   .2426154    .286995    -1.20   0.231     .0238789    2.465035
  LatinoMale |   1.270422    1.00501     0.30   0.762      .269511    5.988519
   OtherMale |   .0253586   529.7691    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
        male |   6.867493    1.45506     9.09   0.000     4.533657    10.40274
         age |   1.078583   .0132261     6.17   0.000     1.052969     1.10482
      tenure |   .9966584   .0114233    -0.29   0.770     .9745187    1.019301
       Asian |   1.59e-06   .0050377    -0.00   0.997            0           .
       Black |   1.265731   .7794538     0.38   0.702     .3785826    4.231774
      Latino |   1.23e-06   .0007025    -0.02   0.981            0           .
       Other |   8.30e-07   .0016078    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   1.18e-07   .0001669    -0.01   0.991            0           .
  LatinoMale |    1542029   8.81e+08     0.02   0.980            0           .
   OtherMale |    3244418   6.29e+09     0.01   0.994            0           .
------------------------------------------------------------------------------


--------->  region = 4
```

```
Iteration 0:   log likelihood = -9860.9827
Iteration 1:   log likelihood = -9588.5981
Iteration 2:   log likelihood =  -8922.469
Iteration 3:   log likelihood = -8909.2714
Iteration 4:   log likelihood = -8909.2089
Iteration 5:   log likelihood = -8909.2089

Multinomial logistic regression                 Number of obs   =      46513
                                                LR chi2(22)     =    1903.55
                                                Prob > chi2     =     0.0000
Log likelihood = -8909.2089                     Pseudo R2       =     0.0965

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   2.874119   .2122375    14.30   0.000     2.486843    3.321706
         age |   1.015742    .004014     3.95   0.000     1.007905     1.02364
      tenure |   1.051918   .0045717    11.65   0.000     1.042995    1.060916
       Asian |   .4005783   .2854718    -1.28   0.199     .0991013    1.619181
       Black |    .986595   .0982872    -0.14   0.892     .8115961    1.199328
      Latino |   1.388615   .2093723     2.18   0.029     1.033331    1.866053
       Other |   .5375286   .3131765    -1.07   0.287     .1715821    1.683958
   AsianMale |   .6473701   .8007964    -0.35   0.725     .0573082    7.312879
   BlackMale |   1.247871   .1912381     1.44   0.148     .9241063    1.685069
  LatinoMale |   1.204206   .2727777     0.82   0.412     .7724778    1.877222
   OtherMale |   1.896834   1.582612     0.77   0.443     .3696873    9.732498
-------------+----------------------------------------------------------------
3            |
        male |   3.110095   .2545114    13.87   0.000      2.64921     3.65116
         age |   1.026087   .0049666     5.32   0.000     1.016398    1.035867
      tenure |   1.105131   .0052944    20.87   0.000     1.094802    1.115556
       Asian |   .4280468     .30734    -1.18   0.237      .104791    1.748472
       Black |    .508644    .064978    -5.29   0.000     .3959816    .6533605
      Latino |   2.740806   .3751337     7.37   0.000     2.095919    3.584117
       Other |   .2464985   .2476791    -1.39   0.163     .0343982    1.766415
   AsianMale |   1.945762   1.833793     0.71   0.480     .3068111    12.33981
   BlackMale |   1.277755   .2458292     1.27   0.203     .8763623    1.862995
  LatinoMale |   .5739464    .142117    -2.24   0.025     .3532663    .9324821
   OtherMale |   1.758634   2.528576     0.39   0.695     .1050295    29.44688
------------------------------------------------------------------------------


---------->  region = 5

Iteration 0:   log likelihood = -1244.8612
Iteration 1:   log likelihood = -1198.5081
Iteration 2:   log likelihood = -1041.1279
Iteration 3:   log likelihood =  -1037.478
Iteration 4:   log likelihood = -1037.2071
Iteration 5:   log likelihood = -1037.1622
Iteration 6:   log likelihood = -1037.1516
Iteration 7:   log likelihood = -1037.1492
Iteration 8:   log likelihood = -1037.1486
Iteration 9:   log likelihood = -1037.1486
Iteration 10:  log likelihood = -1037.1485

Multinomial logistic regression                 Number of obs   =       5841
                                                LR chi2(22)     =     415.43
                                                Prob > chi2     =     0.0000
Log likelihood = -1037.1485                     Pseudo R2       =     0.1669

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
```

```
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   7.922359   1.878858     8.73   0.000     4.977193    12.61027
         age |   .9958976   .0139458    -0.29   0.769      .968936    1.023609
      tenure |   1.073682   .0145675     5.24   0.000     1.045506    1.102616
       Asian |     4.2781   4.460471     1.39   0.163     .5543236    33.01706
       Black |   1.541879   .5806467     1.15   0.250     .7370578    3.225515
      Latino |    5.03515   3.794373     2.15   0.032     1.149652    22.05252
       Other |   6.60e-07    .001367    -0.01   0.995            0           .
   AsianMale |   2.69e-08   .0001136    -0.00   0.997            0           .
   BlackMale |   .6912498   .3383014    -0.75   0.451      .264882    1.803921
  LatinoMale |   .2020721    .260953    -1.24   0.216     .0160797    2.539428
   OtherMale |   .2030346   1020.004    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
        male |   10.04106   2.129749    10.88   0.000     6.625772    15.21679
         age |   1.036703   .0123333     3.03   0.002      1.01281     1.06116
      tenure |   1.065097   .0117281     5.73   0.000     1.042357    1.088334
       Asian |   1.05e-06   .0018914    -0.01   0.994            0           .
       Black |   1.614986   .5452845     1.42   0.156     .8332372    3.130176
      Latino |   1.05e-06   .0015342    -0.01   0.992            0           .
       Other |   6.84e-07   .0011988    -0.01   0.994            0           .
   AsianMale |   .1114026   443.2233    -0.00   1.000            0           .
   BlackMale |    .418433   .1889022    -1.93   0.054     .1727228    1.013683
  LatinoMale |   .0810154   265.6027    -0.00   0.999            0           .
   OtherMale |   .1872864   802.5774    -0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 6

Iteration 0:   log likelihood = -1744.3763
Iteration 1:   log likelihood = -1587.7512
Iteration 2:   log likelihood = -1543.9359
Iteration 3:   log likelihood = -1541.6345
Iteration 4:   log likelihood = -1541.2431
Iteration 5:   log likelihood = -1541.1913
Iteration 6:   log likelihood = -1541.1844
Iteration 7:   log likelihood = -1541.1832
Iteration 8:   log likelihood = -1541.1829
Iteration 9:   log likelihood = -1541.1828
Iteration 10:  log likelihood = -1541.1828

Multinomial logistic regression                 Number of obs   =       8004
                                                LR chi2(22)     =     406.39
                                                Prob > chi2     =     0.0000
Log likelihood = -1541.1828                     Pseudo R2       =     0.1165

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   4.271775   .7387194     8.40   0.000     3.043755    5.995245
         age |   1.035014   .0099942     3.56   0.000      1.01561    1.054789
      tenure |   1.024458   .0110887     2.23   0.026     1.002954    1.046424
       Asian |   3.68e-07   .0008849    -0.01   0.995            0           .
       Black |   .6449916   .3848792    -0.73   0.462     .2002744    2.077221
      Latino |   .7030281   .7116585    -0.35   0.728     .0966767    5.112385
       Other |   4.98e-07   .0007531    -0.01   0.992            0           .
   AsianMale |   .2914901   1341.019    -0.00   1.000            0           .
   BlackMale |   4.572489   3.141357     2.21   0.027     1.189506    17.57676
  LatinoMale |   3.493855   4.022186     1.09   0.277     .3659206    33.35975
   OtherMale |   .2824512   1466.837    -0.00   1.000            0           .
```

```
-------------+----------------------------------------------------------------
3            |
        male |   6.091312   .9169283    12.00   0.000     4.535018    8.181683
         age |   1.064296   .0089782     7.39   0.000     1.046844     1.08204
      tenure |   1.025425   .0091049     2.83   0.005     1.007734    1.043427
       Asian |   3.70e-07   .0007445    -0.01   0.994            0           .
       Black |   .8316677   .3927106    -0.39   0.696     .3296214     2.09838
      Latino |   9.11e-07   .0007745    -0.02   0.987            0           .
       Other |   5.55e-07   .0007091    -0.01   0.991            0           .
   AsianMale |   .2194318   841.1979    -0.00   1.000            0           .
   BlackMale |   1.087084    .690015     0.13   0.895     .3133085    3.771848
  LatinoMale |   407927.2   3.47e+08     0.02   0.988            0           .
   OtherMale |    3963978   5.07e+09     0.01   0.991            0           .
------------------------------------------------------------------------------


---------> region = 7

Iteration 0:   log likelihood = -2180.4839
Iteration 1:   log likelihood = -2003.7146
Iteration 2:   log likelihood = -1858.9683
Iteration 3:   log likelihood = -1853.2835
Iteration 4:   log likelihood = -1853.0282
Iteration 5:   log likelihood = -1852.9872
Iteration 6:   log likelihood = -1852.9772
Iteration 7:   log likelihood = -1852.9751
Iteration 8:   log likelihood = -1852.9746
Iteration 9:   log likelihood = -1852.9745
Iteration 10:  log likelihood = -1852.9745

Multinomial logistic regression                 Number of obs   =      10726
                                                LR chi2(22)     =     655.02
                                                Prob > chi2     =     0.0000
Log likelihood = -1852.9745                     Pseudo R2       =     0.1502

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   9.854562   2.249143    10.02   0.000     6.300347    15.41382
         age |   1.017252   .0116405     1.49   0.135     .9946914    1.040325
      tenure |   1.054917   .0124454     4.53   0.000     1.030804    1.079594
       Asian |    5.50314   5.748536     1.63   0.103      .710317    42.63526
       Black |    1.35597   .6217979     0.66   0.507     .5519764    3.331039
      Latino |   4.005344    4.11198     1.35   0.176     .5355208    29.95734
       Other |   4.11e-06   .0038567    -0.01   0.989            0           .
   AsianMale |   .4624263   .6975406    -0.51   0.609     .0240469    8.892539
   BlackMale |   2.783927    1.44006     1.98   0.048      1.01007    7.672986
  LatinoMale |   1.32e-07   .0002084    -0.01   0.992            0           .
   OtherMale |   470116.3   4.41e+08     0.01   0.989            0           .
-------------+----------------------------------------------------------------
3            |
        male |    6.33925   .8055224    14.53   0.000     4.941701    8.132035
         age |   1.054925   .0073209     7.70   0.000     1.040673    1.069372
      tenure |   1.035993   .0075064     4.88   0.000     1.021385     1.05081
       Asian |   1.47e-06    .001303    -0.02   0.988            0           .
       Black |   .8555714   .2435206    -0.55   0.584     .4897557    1.494628
      Latino |   1.010697   1.024442     0.01   0.992     .1386255    7.368834
       Other |   2.45e-06   .0014633    -0.02   0.983            0           .
   AsianMale |     496805   4.41e+08     0.01   0.988            0           .
   BlackMale |   1.301065   .4956162     0.69   0.490     .6166656    2.745037
  LatinoMale |   1.111348   1.401519     0.08   0.933     .0938428    13.16131
   OtherMale |   278927.3   1.67e+08     0.02   0.983            0           .
------------------------------------------------------------------------------
```

```
---------->  region = 8

Iteration 0:   log likelihood = -818.62377
Iteration 1:   log likelihood = -713.80235
Iteration 2:   log likelihood = -673.55472
Iteration 3:   log likelihood = -672.51715
Iteration 4:   log likelihood = -672.39238
Iteration 5:   log likelihood = -672.37612
Iteration 6:   log likelihood = -672.37392
Iteration 7:   log likelihood = -672.37352
Iteration 8:   log likelihood = -672.37343
Iteration 9:   log likelihood = -672.37341

Multinomial logistic regression                 Number of obs   =       3969
                                                LR chi2(22)     =     292.50
                                                Prob > chi2     =     0.0000
Log likelihood = -672.37341                     Pseudo R2       =     0.1787

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   16.41121   6.875658     6.68   0.000     7.219722    37.30447
         age |   1.051522   .0193613     2.73   0.006     1.014252    1.090163
      tenure |   1.010393   .0189152     0.55   0.581     .9739918    1.048155
       Asian |   6.06e-06   .0467775    -0.00   0.999            0           .
       Black |   3.648648   2.558392     1.85   0.065     .9231641    14.42066
      Latino |   6.95e-06   .0133968    -0.01   0.995            0           .
       Other |   5.89e-06   .0077382    -0.01   0.993            0           .
   AsianMale |   .0437797   368.5182    -0.00   1.000            0           .
   BlackMale |   .7753749   .6405026    -0.31   0.758     .1535932    3.914275
  LatinoMale |   .0427542   153.3725    -0.00   0.999            0           .
   OtherMale |    .085964   247.2712    -0.00   0.999            0           .
-------------+----------------------------------------------------------------
3            |
        male |   11.15243   2.521667    10.67   0.000     7.159864    17.37137
         age |   1.031916   .0129533     2.50   0.012     1.006838    1.057619
      tenure |   1.040662   .0131583     3.15   0.002     1.015189    1.066774
       Asian |   4.11e-06   .0201305    -0.00   0.998            0           .
       Black |   .8239675   .5090238    -0.31   0.754     .2455059    2.765402
      Latino |   5.24e-06   .0064897    -0.01   0.992            0           .
       Other |   3.99e-06   .0033181    -0.01   0.988            0           .
   AsianMale |   .0717415   382.3737    -0.00   1.000            0           .
   BlackMale |   1.316676   .9709609     0.37   0.709     .3102947    5.587061
  LatinoMale |   .0738926   170.7754    -0.00   0.999            0           .
   OtherMale |   300462.2   2.50e+08     0.02   0.988            0           .
------------------------------------------------------------------------------


---------->  region = 9

Iteration 0:   log likelihood = -572.18827
Iteration 1:   log likelihood =  -494.9095
Iteration 2:   log likelihood = -464.38849
Iteration 3:   log likelihood = -463.48238
Iteration 4:   log likelihood = -463.37027
Iteration 5:   log likelihood = -463.35301
Iteration 6:   log likelihood = -463.35099
Iteration 7:   log likelihood = -463.35059
Iteration 8:   log likelihood =  -463.3505
Iteration 9:   log likelihood = -463.35048

Multinomial logistic regression                 Number of obs   =       3037
                                                LR chi2(22)     =     217.68
```

```
                                                Prob > chi2     =     0.0000
Log likelihood = -463.35048                     Pseudo R2       =     0.1902

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   11.03259   5.673143     4.67   0.000     4.026942    30.22592
         age |   1.062604   .0319505     2.02   0.043     1.001792    1.127108
      tenure |   1.055139   .0288425     1.96   0.050     1.000096    1.113211
       Asian |   4.44e-06   .0152109    -0.00   0.997            0           .
       Black |   8.012254   9.039488     1.84   0.065     .8778544    73.12854
      Latino |   5.66e-06   .0090386    -0.01   0.994            0           .
       Other |   5.66e-06   .0117671    -0.01   0.995            0           .
   AsianMale |   .3215295   3319.218    -0.00   1.000            0           .
   BlackMale |   4.19e-08   .0001055    -0.01   0.995            0           .
  LatinoMale |    1319582   2.11e+09     0.01   0.993            0           .
   OtherMale |   .0872925   304.0951    -0.00   0.999            0           .
-------------+----------------------------------------------------------------
3            |
        male |   9.753389   2.379129     9.34   0.000     6.046767    15.73214
         age |   1.070128   .0154186     4.70   0.000     1.040331    1.100778
      tenure |   1.022973     .01408     1.65   0.099     .9957452    1.050945
       Asian |   4.43e-06   .0079011    -0.01   0.994            0           .
       Black |   5.811441   3.812552     2.68   0.007     1.606421    21.02365
      Latino |   3.358177   3.559228     1.14   0.253     .4206697    26.80809
       Other |   4.05e-06     .00417    -0.01   0.990            0           .
   AsianMale |   .2366882   1216.257    -0.00   1.000            0           .
   BlackMale |   5.86e-08    .000076    -0.01   0.990            0           .
  LatinoMale |   3.76e-08   .0001341    -0.00   0.996            0           .
   OtherMale |   .0987912   170.2017    -0.00   0.999            0           .
------------------------------------------------------------------------------


---------> region = 10

Iteration 0:   log likelihood = -6545.4666
Iteration 1:   log likelihood = -6291.0691
Iteration 2:   log likelihood = -5775.8871
Iteration 3:   log likelihood = -5765.6865
Iteration 4:   log likelihood =  -5765.575
Iteration 5:   log likelihood = -5765.5663
Iteration 6:   log likelihood = -5765.5646
Iteration 7:   log likelihood = -5765.5643
Iteration 8:   log likelihood = -5765.5642
Iteration 9:   log likelihood = -5765.5642

Multinomial logistic regression                 Number of obs   =      30222
                                                LR chi2(22)     =    1559.80
                                                Prob > chi2     =     0.0000
Log likelihood = -5765.5642                     Pseudo R2       =     0.1192

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   4.410659   .4322095    15.14   0.000     3.639926    5.344591
         age |   1.016107   .0054216     2.99   0.003     1.005536    1.026789
      tenure |   1.060596     .00597    10.45   0.000     1.048959    1.072361
       Asian |   .0755832   .0760214    -2.57   0.010     .0105266    .5427023
       Black |   2.278732   .3101744     6.05   0.000     1.745139    2.975475
      Latino |   3.163143   .6287885     5.79   0.000     2.142456    4.670096
       Other |   .3241272   .3257639    -1.12   0.262     .0452081    2.323888
```

```
   AsianMale |   6.844531   7.285721     1.81   0.071      .849718    55.13313
   BlackMale |    .751193   .1554495    -1.38   0.167     .5007334    1.126929
  LatinoMale |   .7914484   .2307096    -0.80   0.422     .4469869    1.401362
   OtherMale |   6.47e-06     .00293    -0.03   0.979            0           .
-------------+----------------------------------------------------------------
3            |
        male |   4.265093   .3770795    16.41   0.000     3.586519    5.072052
         age |   1.031804   .0053278     6.06   0.000     1.021414    1.042299
      tenure |   1.085527   .0056089    15.88   0.000     1.074589    1.096576
       Asian |   .2211392    .093428    -3.57   0.000     .0966153    .5061575
       Black |   1.278333    .185732     1.69   0.091     .9615477    1.699484
      Latino |   2.516387   .5134211     4.52   0.000     1.686964    3.753608
       Other |    .246871    .248271    -1.39   0.164     .0343907    1.772143
   AsianMale |   2.026319    1.02803     1.39   0.164     .7496527     5.47716
   BlackMale |    .716493   .1647344    -1.45   0.147     .4565682    1.124393
  LatinoMale |   .7175964    .221898    -1.07   0.283     .3914428    1.315504
   OtherMale |   9.462505    10.4021     2.04   0.041     1.097193     81.6073
------------------------------------------------------------------------------


--------->  region = 11

Iteration 0:   log likelihood = -4731.7788
Iteration 1:   log likelihood = -4564.7988
Iteration 2:   log likelihood = -4227.3397
Iteration 3:   log likelihood = -4220.9675
Iteration 4:   log likelihood = -4220.8272
Iteration 5:   log likelihood = -4220.7971
Iteration 6:   log likelihood = -4220.7897
Iteration 7:   log likelihood = -4220.7881
Iteration 8:   log likelihood = -4220.7878
Iteration 9:   log likelihood = -4220.7877
Iteration 10:  log likelihood = -4220.7877

Multinomial logistic regression                 Number of obs   =      21086
                                                LR chi2(22)     =    1021.98
                                                Prob > chi2     =     0.0000
Log likelihood = -4220.7877                     Pseudo R2       =     0.1080

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |    3.13017   .3376119    10.58   0.000     2.533726    3.867019
         age |   1.069337   .0053892    13.30   0.000     1.058826    1.079952
      tenure |   .9136006   .0073811   -11.18   0.000     .8992479    .9281825
       Asian |   2.58e-06   .0018014    -0.02   0.985            0           .
       Black |    3.14054   .5776677     6.22   0.000     2.189955    4.503742
      Latino |   3.110969    .692867     5.10   0.000     2.010566    4.813635
       Other |   .3179191   .3199184    -1.14   0.255     .0442346    2.284921
   AsianMale |   317409.7   2.22e+08     0.02   0.986            0           .
   BlackMale |   .8149341   .2282524    -0.73   0.465     .4706652    1.411019
  LatinoMale |   .7329103   .2693374    -0.85   0.398     .3566503    1.506118
   OtherMale |   1.71e-06   .0014394    -0.02   0.987            0           .
-------------+----------------------------------------------------------------
3            |
        male |   4.757313   .4641235    15.99   0.000     3.929329    5.759767
         age |   1.097464   .0056909    17.94   0.000     1.086367    1.108675
      tenure |   .9676504   .0057784    -5.51   0.000     .9563909    .9790424
       Asian |   1.302416   1.333355     0.26   0.796     .1751169    9.686605
       Black |   1.839754   .3925903     2.86   0.004     1.210931    2.795117
      Latino |   1.727932   .5245149     1.80   0.072     .9531114    3.132632
       Other |   .3030549    .305122    -1.19   0.236     .0421225    2.180363
   AsianMale |   3.18e-07   .0003839    -0.01   0.990            0           .
   BlackMale |   .3768217    .134775    -2.73   0.006     .1869361    .7595891
```

```
  LatinoMale |   .7755796   .3483155    -0.57   0.571     .3216243    1.870269
   OtherMale |   1.819718   2.275311     0.48   0.632      .156925    21.10164
------------------------------------------------------------------------------


--------->  region = 12

Iteration 0:   log likelihood = -1775.1807
Iteration 1:   log likelihood = -1598.6825
Iteration 2:   log likelihood = -1547.8287
Iteration 3:   log likelihood = -1545.7472
Iteration 4:   log likelihood = -1545.4066
Iteration 5:   log likelihood = -1545.3567
Iteration 6:   log likelihood = -1545.3506
Iteration 7:   log likelihood = -1545.3495
Iteration 8:   log likelihood = -1545.3492
Iteration 9:   log likelihood = -1545.3492
Iteration 10:  log likelihood = -1545.3491

Multinomial logistic regression                 Number of obs   =       8490
                                                LR chi2(22)     =     459.66
                                                Prob > chi2     =     0.0000
Log likelihood = -1545.3491                     Pseudo R2       =     0.1295

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   4.478516   .9348385     7.18   0.000     2.974785    6.742371
         age |   1.009626   .0116827     0.83   0.408     .9869858    1.032785
      tenure |   1.050747   .0135382     3.84   0.000     1.024545     1.07762
       Asian |   3.94e-07    .000793    -0.01   0.994            0           .
       Black |    2.45624   .8824267     2.50   0.012     1.214699    4.966755
      Latino |   .9023354   .9164171    -0.10   0.919     .1232772    6.604702
       Other |   7.15e-07   .0012646    -0.01   0.994            0           .
   AsianMale |    5543009   1.11e+10     0.01   0.994            0           .
   BlackMale |   1.305077    .655593     0.53   0.596     .4875772    3.493246
  LatinoMale |   3.982437   4.495545     1.22   0.221      .435789    36.39331
   OtherMale |    2978956   5.27e+09     0.01   0.993            0           .
-------------+----------------------------------------------------------------
3            |
        male |   6.416823   .9280974    12.85   0.000     4.832885    8.519883
         age |   1.050653    .008555     6.07   0.000     1.034019    1.067556
      tenure |   1.049085   .0088866     5.66   0.000     1.031811    1.066648
       Asian |   3.32e-07   .0004411    -0.01   0.991            0           .
       Black |   1.365039   .4376728     0.97   0.332     .7281558    2.558975
      Latino |   3.147436   1.376104     2.62   0.009     1.335978    7.415055
       Other |   7.93e-07    .000959    -0.01   0.991            0           .
   AsianMale |   .1852318   500.4684    -0.00   1.000            0           .
   BlackMale |   .7983081   .3816673    -0.47   0.638     .3127628    2.037633
  LatinoMale |   4.63e-08   .0000659    -0.01   0.991            0           .
   OtherMale |   .1968845   510.7981    -0.00   1.000            0           .
------------------------------------------------------------------------------


--------->  region = 13

Iteration 0:   log likelihood =  -3076.027
Iteration 1:   log likelihood = -3033.9505
Iteration 2:   log likelihood =  -2837.251
Iteration 3:   log likelihood =  -2796.389
Iteration 4:   log likelihood = -2790.4031
Iteration 5:   log likelihood = -2789.1758
Iteration 6:   log likelihood = -2789.1166
Iteration 7:   log likelihood =  -2789.113
```

```
Iteration 8:   log likelihood = -2789.1122
Iteration 9:   log likelihood =  -2789.112
Iteration 10:  log likelihood =  -2789.112

Multinomial logistic regression                 Number of obs   =      14853
                                                LR chi2(22)     =     573.83
                                                Prob > chi2     =     0.0000
Log likelihood =  -2789.112                     Pseudo R2       =     0.0933

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   3.039356   .4461781     7.57   0.000     2.279424    4.052641
         age |   1.038612   .0081055     4.85   0.000     1.022846     1.05462
      tenure |   1.034193    .009149     3.80   0.000     1.016416    1.052281
       Asian |   2.10e-06   .0021285    -0.01   0.990            0           .
       Black |   2.916812   .7346295     4.25   0.000     1.780428    4.778509
      Latino |   2.468131   .5407233     4.12   0.000     1.606516     3.79185
       Other |   2.14e-06   .0013037    -0.02   0.983            0           .
   AsianMale |    .252701   568.4224    -0.00   1.000            0           .
   BlackMale |   1.535885   .5968268     1.10   0.269     .7171201    3.289468
  LatinoMale |   .7139426   .2543692    -0.95   0.344     .3551324    1.435279
   OtherMale |   518525.9   3.16e+08     0.02   0.983            0           .
-------------+----------------------------------------------------------------
3            |
        male |   4.457917   .5381505    12.38   0.000     3.518655    5.647904
         age |   1.061159   .0071078     8.86   0.000     1.047319    1.075182
      tenure |   1.031094   .0076024     4.15   0.000     1.016301    1.046103
       Asian |   2.24e-06   .0018473    -0.02   0.987            0           .
       Black |   1.727916   .4852408     1.95   0.051      .996517    2.996131
      Latino |    1.77153    .415066     2.44   0.015     1.119215    2.804035
       Other |   .5789458   .5869592    -0.54   0.590     .0793697    4.223002
   AsianMale |   .1562218   291.9318    -0.00   0.999            0           .
   BlackMale |   1.329441    .543175     0.70   0.486     .5968847    2.961065
  LatinoMale |   .6368829   .2230791    -1.29   0.198     .3205618     1.26534
   OtherMale |   1.22e-06   .0011315    -0.01   0.988            0           .
------------------------------------------------------------------------------


--------->  region = 14

Iteration 0:   log likelihood = -742.60795
Iteration 1:   log likelihood =  -726.5935
Iteration 2:   log likelihood = -630.27298
Iteration 3:   log likelihood = -627.73635
Iteration 4:   log likelihood =   -627.439
Iteration 5:   log likelihood = -627.39044
Iteration 6:   log likelihood = -627.37824
Iteration 7:   log likelihood = -627.37573
Iteration 8:   log likelihood = -627.37519
Iteration 9:   log likelihood = -627.37507
Iteration 10:  log likelihood = -627.37504
Iteration 11:  log likelihood = -627.37504

Multinomial logistic regression                 Number of obs   =       3898
                                                LR chi2(22)     =     230.47
                                                Prob > chi2     =     0.0000
Log likelihood = -627.37504                     Pseudo R2       =     0.1552

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
```

```
2            |
        male |    6.09642   2.284995     4.82   0.000     2.924399    12.70905
         age |    1.00149   .0227175     0.07   0.948     .9579399     1.04702
      tenure |   1.053507   .0256017     2.14   0.032     1.004505      1.1049
       Asian |   5.55e-07   .0051766    -0.00   0.999            0           .
       Black |   4.688427   4.987283     1.45   0.146      .582864    37.71266
      Latino |   5.31e-07   .0013096    -0.01   0.995            0           .
       Other |   4.71e-07     .00199    -0.00   0.997            0           .
   AsianMale |   .1774332   2405.394    -0.00   1.000            0           .
   BlackMale |   .4163758   .6240618    -0.58   0.559     .0220653     7.85709
  LatinoMale |    5334149   1.32e+10     0.01   0.995            0           .
   OtherMale |   .0423681    741.896    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
        male |   9.113677   1.989395    10.12   0.000     5.941384    13.97976
         age |   1.057401   .0129769     4.55   0.000      1.03227    1.083143
      tenure |    1.02991   .0126862     2.39   0.017     1.005344    1.055078
       Asian |   1.05e-06   .0049112    -0.00   0.998            0           .
       Black |   7.72e-07   .0011971    -0.01   0.993            0           .
      Latino |   8.30e-07   .0010741    -0.01   0.991            0           .
       Other |   2.412189   2.518506     0.84   0.399     .3116685    18.66937
   AsianMale |   .0778681   547.8446    -0.00   1.000            0           .
   BlackMale |    1390125   2.16e+09     0.01   0.993            0           .
  LatinoMale |   971274.9   1.26e+09     0.01   0.992            0           .
   OtherMale |   .6407733    .999347    -0.29   0.775     .0301422    13.62179
------------------------------------------------------------------------------


---------->  region = 15

Iteration 0:   log likelihood = -767.73012
Iteration 1:   log likelihood = -735.66874
Iteration 2:   log likelihood = -660.64668
Iteration 3:   log likelihood = -659.03553
Iteration 4:   log likelihood = -658.97078
Iteration 5:   log likelihood = -658.95627
Iteration 6:   log likelihood = -658.95281
Iteration 7:   log likelihood =  -658.9521
Iteration 8:   log likelihood = -658.95198
Iteration 9:   log likelihood = -658.95196

Multinomial logistic regression                 Number of obs   =       3742
                                                LR chi2(22)     =     217.56
                                                Prob > chi2     =     0.0000
Log likelihood = -658.95196                     Pseudo R2       =     0.1417

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   3.383308   1.344172     3.07   0.002      1.55297    7.370889
         age |   1.008881   .0238106     0.37   0.708     .9632759    1.056645
      tenure |   1.073471   .0249713     3.05   0.002     1.025627    1.123547
       Asian |   1.77e-06   .0081616    -0.00   0.998            0           .
       Black |   3.19e-06    .004978    -0.01   0.994            0           .
      Latino |   2.728436   1.486849     1.84   0.065     .9376814    7.939116
       Other |   2.71e-06   .0047987    -0.01   0.994            0           .
   AsianMale |   .7099798   7129.797    -0.00   1.000            0           .
   BlackMale |   .2410717   883.2143    -0.00   1.000            0           .
  LatinoMale |   .7204798   .5011983    -0.47   0.637      .184284    2.816801
   OtherMale |   .1499115   831.2928    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
        male |   8.186861   1.884938     9.13   0.000     5.213596    12.85575
         age |   1.070117   .0126707     5.72   0.000     1.045569    1.095242
```

```
      tenure |    1.01645   .0120426     1.38   0.168     .9931186    1.040329
       Asian |   2.45e-06   .0063964    -0.00   0.996            0           .
       Black |   3.146928   3.320593     1.09   0.277     .3978425    24.89215
      Latino |   1.547905   .7660263     0.88   0.377     .5868161    4.083066
       Other |   3.15e-06   .0033526    -0.01   0.991            0           .
   AsianMale |   .3763343    2138.67    -0.00   1.000            0           .
   BlackMale |   1.65e-07   .0002867    -0.01   0.993            0           .
  LatinoMale |   .5244988   .3032987    -1.12   0.264     .1688594    1.629159
   OtherMale |   505858.3   5.39e+08     0.01   0.990            0           .
------------------------------------------------------------------------------


--------->  region = 16

Iteration 0:   log likelihood = -1214.5715
Iteration 1:   log likelihood = -1194.8345
Iteration 2:   log likelihood = -1067.3387
Iteration 3:   log likelihood = -1064.6218
Iteration 4:   log likelihood = -1064.4877
Iteration 5:   log likelihood = -1064.4553
Iteration 6:   log likelihood = -1064.4488
Iteration 7:   log likelihood = -1064.4475
Iteration 8:   log likelihood = -1064.4471
Iteration 9:   log likelihood = -1064.4471
Iteration 10:  log likelihood =  -1064.447

Multinomial logistic regression                 Number of obs   =       5734
                                                LR chi2(22)     =     300.25
                                                Prob > chi2     =     0.0000
Log likelihood =  -1064.447                     Pseudo R2       =     0.1236

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   5.370784   1.319113     6.84   0.000     3.318753    8.691613
         age |   1.021056   .0153053     1.39   0.164     .9914946    1.051499
      tenure |   1.031626   .0167045     1.92   0.054     .9994002    1.064892
       Asian |   4.98e-07   .0024866    -0.00   0.998            0           .
       Black |   11.03887   7.069838     3.75   0.000     3.146103    38.73256
      Latino |   1.305914   1.336387     0.26   0.794      .175732    9.704616
       Other |   5.53e-07   .0012443    -0.01   0.995            0           .
   AsianMale |   .2504978    3175.82    -0.00   1.000            0           .
   BlackMale |   .1754553   .2172713    -1.41   0.160     .0154917    1.987164
  LatinoMale |   1.991483   2.385954     0.57   0.565     .1902699     20.8441
   OtherMale |    .183667   1041.751    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
        male |   7.561831   1.257194    12.17   0.000     5.458964    10.47475
         age |   1.043691   .0103505     4.31   0.000       1.0236    1.064176
      tenure |   1.024486   .0106404     2.33   0.020     1.003842    1.045554
       Asian |   5.70e-07   .0018811    -0.00   0.997            0           .
       Black |   7.95e-08   .0003862    -0.00   0.997            0           .
      Latino |   1.395964    1.01608     0.46   0.647      .335205    5.813507
       Other |   6.29e-07   .0009185    -0.01   0.992            0           .
   AsianMale |   .2015162   1671.221    -0.00   1.000            0           .
   BlackMale |   .3720007   2574.345    -0.00   1.000            0           .
  LatinoMale |   .2602679   .3263705    -1.07   0.283      .022286    3.039551
   OtherMale |   .1225657   452.6494    -0.00   1.000            0           .
------------------------------------------------------------------------------


--------->  region = 17

Iteration 0:   log likelihood = -1230.2952
```

```
Iteration 1:   log likelihood = -1205.5449
Iteration 2:   log likelihood = -1027.1536
Iteration 3:   log likelihood = -1016.1236  (backed up)
Iteration 4:   log likelihood = -1010.4169  (backed up)
Iteration 5:   log likelihood = -1007.2539
Iteration 6:   log likelihood =  -1004.026
Iteration 7:   log likelihood = -1003.9026
Iteration 8:   log likelihood = -1003.8894
Iteration 9:   log likelihood = -1003.8876
Iteration 10:  log likelihood = -1003.8874
Iteration 11:  log likelihood = -1003.8874
Iteration 12:  log likelihood = -1003.8873

Multinomial logistic regression                 Number of obs   =       6237
                                                LR chi2(22)     =     452.82
                                                Prob > chi2     =     0.0000
Log likelihood = -1003.8873                     Pseudo R2       =     0.1840

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   10.35026   3.159003     7.66   0.000     5.690577     18.8255
         age |   1.032203   .0168873     1.94   0.053     .9996293    1.065838
      tenure |     1.0156   .0190453     0.83   0.409     .9789494    1.053622
       Asian |   4.54e-06   .0154735    -0.00   0.997            0           .
       Black |   3.45e-06    .003022    -0.01   0.989            0           .
      Latino |   1.167374   1.209965     0.15   0.881     .1530921    8.901578
       Other |   3.87e-06   .0048407    -0.01   0.992            0           .
   AsianMale |   .1098801   603.2393    -0.00   1.000            0           .
   BlackMale |   316448.1   2.78e+08     0.01   0.988            0           .
  LatinoMale |   1.186898   1.384573     0.15   0.883     .1206276    11.67832
   OtherMale |   712570.7   8.91e+08     0.01   0.991            0           .
-------------+----------------------------------------------------------------
3            |
        male |   11.83505   2.120013    13.79   0.000     8.330944    16.81302
         age |   1.057864   .0105828     5.62   0.000     1.037324     1.07881
      tenure |   1.043794    .010562     4.24   0.000     1.023297    1.064702
       Asian |   7.05e-06   .0111392    -0.01   0.994            0           .
       Black |   2.643768   1.443685     1.78   0.075     .9065813    7.709743
      Latino |   1.903061   1.008453     1.21   0.225     .6735835    5.376678
       Other |   2.206349   2.264695     0.77   0.441     .2950956    16.49626
   AsianMale |   .1127803   315.7107    -0.00   0.999            0           .
   BlackMale |   .1991167   .1870476    -1.72   0.086     .0315864    1.255206
  LatinoMale |   .6918816    .435182    -0.59   0.558     .2016695    2.373687
   OtherMale |   .4025248   .5985872    -0.61   0.541     .0218266    7.423329
------------------------------------------------------------------------------


---------->  region = 18

Iteration 0:   log likelihood = -1039.1286
Iteration 1:   log likelihood = -924.54724
Iteration 2:   log likelihood = -885.15912
Iteration 3:   log likelihood = -883.98024
Iteration 4:   log likelihood = -883.87484
Iteration 5:   log likelihood = -883.85697
Iteration 6:   log likelihood = -883.85281
Iteration 7:   log likelihood = -883.85185
Iteration 8:   log likelihood = -883.85165
Iteration 9:   log likelihood = -883.85161

Multinomial logistic regression                 Number of obs   =       5522
                                                LR chi2(22)     =     310.55
                                                Prob > chi2     =     0.0000
```

```
Log likelihood = -883.85161                     Pseudo R2       =     0.1494

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   8.438477    3.16099     5.69   0.000     4.049584      17.584
         age |   1.014127   .0198997     0.71   0.475     .9758652     1.05389
      tenure |   1.053181   .0204034     2.67   0.007      1.01394    1.093939
       Asian |   5.62e-06    .014901    -0.00   0.996            0           .
       Black |   2.602379   2.756413     0.90   0.367     .3264275    20.74696
      Latino |   2.444679   1.618737     1.35   0.177     .6677305    8.950398
       Other |   6.33e-06   .0076111    -0.01   0.992            0           .
   AsianMale |   .2095386   1723.947    -0.00   1.000            0           .
   BlackMale |   1.115659   1.338914     0.09   0.927     .1061684    11.72378
  LatinoMale |   .8476822   .6537043    -0.21   0.830     .1869884    3.842832
   OtherMale |   .1448525   393.9153    -0.00   0.999            0           .
-------------+----------------------------------------------------------------
3            |
        male |   7.515782    1.44658    10.48   0.000     5.153965    10.95991
         age |   1.050626   .0112245     4.62   0.000     1.028855    1.072858
      tenure |   1.040318   .0106359     3.87   0.000      1.01968    1.061375
       Asian |   4.61e-06   .0067679    -0.01   0.993            0           .
       Black |   1.270006   .9378571     0.32   0.746     .2986907     5.39995
      Latino |   2.159964   .7766987     2.14   0.032     1.067491    4.370479
       Other |   4.76e-06   .0031816    -0.02   0.985            0           .
   AsianMale |   .3144344   1462.708    -0.00   1.000            0           .
   BlackMale |   .3215007   .3372001    -1.08   0.279     .0411543    2.511591
  LatinoMale |   .4669414   .2167192    -1.64   0.101     .1880176    1.159648
   OtherMale |   .1726018   259.8152    -0.00   0.999            0           .
------------------------------------------------------------------------------


---------->  region = 19

Iteration 0:   log likelihood = -1848.9755
Iteration 1:   log likelihood = -1791.6482
Iteration 2:   log likelihood = -1613.9071
Iteration 3:   log likelihood = -1609.4346
Iteration 4:   log likelihood = -1609.1802
Iteration 5:   log likelihood = -1609.1367
Iteration 6:   log likelihood = -1609.1267
Iteration 7:   log likelihood = -1609.1243
Iteration 8:   log likelihood = -1609.1238
Iteration 9:   log likelihood = -1609.1237
Iteration 10:  log likelihood = -1609.1237

Multinomial logistic regression                 Number of obs   =       9322
                                                LR chi2(22)     =     479.70
                                                Prob > chi2     =     0.0000
Log likelihood = -1609.1237                     Pseudo R2       =     0.1297

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   2.212291   .4550925     3.86   0.000     1.478226    3.310882
         age |   1.020349   .0098453     2.09   0.037     1.001234    1.039829
      tenure |   1.080732   .0103329     8.12   0.000     1.060668    1.101175
       Asian |   5.74e-07   .0011044    -0.01   0.994            0           .
       Black |   1.339211   .6474864     0.60   0.546     .5191667    3.454545
      Latino |   1.041333   .2167683     0.19   0.846     .6924683    1.565955
       Other |   8.50e-07   .0009029    -0.01   0.989            0           .
```

```
   AsianMale |    3220847   6.20e+09     0.01   0.994           0           .
   BlackMale |   .5810349   .5122145    -0.62   0.538     .1032335     3.27027
  LatinoMale |   1.630581   .4728214     1.69   0.092     .9236731      2.8785
   OtherMale |   .5111999   1148.165    -0.00   1.000           0           .
-------------+----------------------------------------------------------------
3            |
        male |   2.928333   .6609423     4.76   0.000     1.881478    4.557658
         age |    1.01982   .0121259     1.65   0.099     .9963288    1.043866
      tenure |   1.125828   .0126804    10.52   0.000     1.101247    1.150958
       Asian |   1.00e-06   .0015151    -0.01   0.993           0           .
       Black |   .6055099   .4516556    -0.67   0.501     .1403466    2.612406
      Latino |   1.209614   .2817853     0.82   0.414     .7662234    1.909582
       Other |   1.62e-06   .0014935    -0.01   0.988           0           .
   AsianMale |   .5552289   1289.883    -0.00   1.000           0           .
   BlackMale |    2.21668   2.155723     0.82   0.413     .3295406    14.91067
  LatinoMale |   .9092067    .298319    -0.29   0.772     .4779425    1.729616
   OtherMale |    1285673   1.18e+09     0.02   0.988           0           .
------------------------------------------------------------------------------


---------->  region = 20

Iteration 0:   log likelihood = -4001.2437
Iteration 1:   log likelihood = -3879.6749
Iteration 2:   log likelihood = -3578.3325
Iteration 3:   log likelihood =  -3572.715
Iteration 4:   log likelihood = -3572.5901
Iteration 5:   log likelihood = -3572.5636
Iteration 6:   log likelihood = -3572.5572
Iteration 7:   log likelihood = -3572.5558
Iteration 8:   log likelihood = -3572.5555
Iteration 9:   log likelihood = -3572.5555
Iteration 10:  log likelihood = -3572.5554

Multinomial logistic regression                 Number of obs   =      19357
                                                LR chi2(22)     =     857.38
                                                Prob > chi2     =     0.0000
Log likelihood = -3572.5554                     Pseudo R2       =     0.1071

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   2.756962   .3568461     7.84   0.000     2.139222    3.553085
         age |     1.0197   .0066259     3.00   0.003     1.006796    1.032769
      tenure |   1.056388    .007289     7.95   0.000     1.042198    1.070772
       Asian |   1.45e-06   .0011803    -0.02   0.987           0           .
       Black |    1.13379   .3242665     0.44   0.661     .6472721    1.985995
      Latino |   1.246553   .1979701     1.39   0.165     .9131207    1.701742
       Other |   .5910844   .5962264    -0.52   0.602     .0818546    4.268309
   AsianMale |   .2825129   661.4773    -0.00   1.000           0           .
   BlackMale |   1.828563   .7080376     1.56   0.119     .8560841    3.905742
  LatinoMale |   1.241145   .2774551     0.97   0.334      .800826    1.923564
   OtherMale |   3.110785   3.663182     0.96   0.335     .3093973    31.27688
-------------+----------------------------------------------------------------
3            |
        male |   3.123239   .4100433     8.67   0.000     2.414642    4.039779
         age |   1.022137   .0073578     3.04   0.002     1.007818    1.036661
      tenure |   1.107128   .0077337    14.57   0.000     1.092074     1.12239
       Asian |   .9704595   .9954994    -0.03   0.977      .129961    7.246725
       Black |   1.053373   .2966076     0.18   0.853     .6065987    1.829206
      Latino |   1.370281   .2205057     1.96   0.050     .9996187    1.878387
       Other |   .7252442    .733399    -0.32   0.751     .0999336    5.263285
   AsianMale |   2.054696   3.071383     0.48   0.630     .1097391    38.47101
   BlackMale |   .9639395   .4188147    -0.08   0.933     .4113559    2.258821
```

```
  LatinoMale |   1.113475   .2494394     0.48   0.631     .7177866    1.727292
   OtherMale |   1.02e-06   .0009751    -0.01   0.988            0           .
------------------------------------------------------------------------------
```

1994-95

```
. mlogit admin  male Asian Black Latino Other AsianMale BlackMale LatinoMale OtherMale
tenure age  pyperstudecodis pyperstudlep pyperstud
> black pyperstudlatino if validcert1995a==1, rrr

Iteration 0:   log likelihood = -20574.843
Iteration 1:   log likelihood = -19679.973
Iteration 2:   log likelihood =  -19663.87
Iteration 3:   log likelihood =  -19663.83
Iteration 4:   log likelihood =  -19663.83

Multinomial logistic regression                 Number of obs   =      19981
                                                LR chi2(30)     =    1822.03
                                                Prob > chi2     =     0.0000
Log likelihood =  -19663.83                     Pseudo R2       =     0.0443

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   1.400769   .0623329     7.57   0.000     1.283775    1.528425
       Asian |     .49428   .2670504    -1.30   0.192     .1714291    1.425153
       Black |     1.2838   .1014581     3.16   0.002     1.099581    1.498882
      Latino |   1.312004    .099449     3.58   0.000     1.130875    1.522144
       Other |   .8791098   .2697515    -0.42   0.675     .4817871    1.604098
   AsianMale |   3.498102   2.417694     1.81   0.070     .9026701    13.55613
   BlackMale |   1.707105   .1910345     4.78   0.000     1.370901    2.125761
  LatinoMale |   1.414192   .1397044     3.51   0.000     1.165253    1.716312
   OtherMale |   1.178251   .5175675     0.37   0.709     .4981182    2.787039
      tenure |   1.001523   .0024504     0.62   0.534     .9967319    1.006337
         age |   .9810666   .0025221    -7.44   0.000     .9761357    .9860224
pyperstude~s |   .9916077   .0011507    -7.26   0.000      .989355    .9938656
pyperstudlep |   1.011318   .0016971     6.71   0.000     1.007997     1.01465
pyperstudb~k |   1.000294   .0012509     0.24   0.814     .9978455    1.002749
pyperstudl~o |   1.000506   .0011665     0.43   0.664     .9982224    1.002795
-------------+----------------------------------------------------------------
3            |
        male |   1.925684    .079003    15.97   0.000     1.776903    2.086923
       Asian |   .8552661   .3316812    -0.40   0.687     .3999413    1.828968
       Black |   .9148681   .0777666    -1.05   0.295     .7744685     1.08072
      Latino |   1.450261   .1080472     4.99   0.000     1.253227    1.678271
       Other |   .3231089   .1414043    -2.58   0.010     .1370351    .7618436
   AsianMale |   1.826568   .9989595     1.10   0.271     .6253304    5.335343
   BlackMale |   1.185487   .1463033     1.38   0.168     .9307826     1.50989
  LatinoMale |   .9083381    .089374    -0.98   0.329     .7490234    1.101538
   OtherMale |   2.871593   1.521385     1.99   0.046     1.016604    8.111364
      tenure |   1.025563   .0022949    11.28   0.000     1.021075    1.030071
         age |   1.013527   .0025061     5.43   0.000     1.008627    1.018451
pyperstude~s |   1.025502   .0011922    21.66   0.000     1.023168    1.027841
pyperstudlep |   1.008257   .0016241     5.10   0.000     1.005078    1.011445
pyperstudb~k |   .9765091   .0012698   -18.28   0.000     .9740236     .979001
pyperstudl~o |   .9743351   .0011435   -22.15   0.000     .9720965    .9765788
------------------------------------------------------------------------------

. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=19981)

 Ho: All coefficients associated with given variable(s) are 0.
```

```
             |       chi2   df   P>chi2
-------------+------------------------
        male |    266.012    2    0.000
       Asian |      2.012    2    0.366
       Black |     13.428    2    0.001
      Latino |     29.618    2    0.000
       Other |      8.775    2    0.012
   AsianMale |      3.878    2    0.144
   BlackMale |     22.981    2    0.000
  LatinoMale |     18.189    2    0.000
   OtherMale |      4.371    2    0.112
      tenure |    138.688    2    0.000
         age |    121.359    2    0.000
pyperstude~s |    708.092    2    0.000
pyperstudlep |     53.833    2    0.000
pyperstudb~k |    395.800    2    0.000
pyperstudl~o |    584.558    2    0.000
---------------------------------------

**** Wald tests for independent variables (N=19981)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+------------------------
        male |    263.172    2    0.000
       Asian |      1.733    2    0.420
       Black |     13.654    2    0.001
      Latino |     29.755    2    0.000
       Other |      6.665    2    0.036
   AsianMale |      3.656    2    0.161
   BlackMale |     22.897    2    0.000
  LatinoMale |     18.153    2    0.000
   OtherMale |      3.968    2    0.138
      tenure |    136.746    2    0.000
         age |    119.774    2    0.000
pyperstude~s |    662.423    2    0.000
pyperstudlep |     53.404    2    0.000
pyperstudb~k |    364.186    2    0.000
pyperstudl~o |    541.853    2    0.000
---------------------------------------

**** Hausman tests of IIA assumption (N=19981)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+----------------------------------
       2 |   -75.643   16     ---    ---
       3 |   -12.338   16     ---    ---
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=19981)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+--------------------------------------------------------
       2 |  -4704.631  -4693.975  21.311   16    0.167   for Ho
       3 |  -4417.380  -4411.799  11.161   16    0.799   for Ho
-----------------------------------------------------------------

**** Wald tests for combining alternatives (N=19981)

 Ho: All coefficients except intercepts associated with a given pair
```

```
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+-------------------------
       2-       3  | 1021.129   15    0.000
       2-       1  |  443.617   15    0.000
       3-       1  | 1103.866   15    0.000
-------------------------------------------

**** LR tests for combining alternatives (N=19981)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+-------------------------
       2-       3  | 1121.995   15    0.000
       2-       1  |  452.839   15    0.000
       3-       1  | 1222.626   15    0.000
-------------------------------------------
by region

. bysort region: mlogit admin  male Asian Black Latino Other AsianMale BlackMale
LatinoMale OtherMale tenure age  pyperstudecodis pyperst
> udlep pyperstudblack pyperstudlatino if validcert1995a==1, rrr


---------->  region = 1

note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
Iteration 0:   log likelihood = -1331.6885
Iteration 1:   log likelihood =  -1261.042
Iteration 2:   log likelihood = -1259.0501
Iteration 3:   log likelihood = -1258.7574
Iteration 4:   log likelihood = -1258.7093
Iteration 5:   log likelihood = -1258.7064
Iteration 6:   log likelihood = -1258.7057
Iteration 7:   log likelihood = -1258.7056
Iteration 8:   log likelihood = -1258.7055
Iteration 9:   log likelihood = -1258.7055

Multinomial logistic regression                 Number of obs   =       1252
                                                LR chi2(26)     =     145.97
                                                Prob > chi2     =     0.0000
Log likelihood = -1258.7055                     Pseudo R2       =     0.0548

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   1.674293   .5062673     1.70   0.088     .9256526    3.028413
       Asian |   9.44e-07   .0014899    -0.01   0.993            0           .
       Black |   1.787728   2.620982     0.40   0.692     .1010086    31.64061
      Latino |   1.317062   .3314241     1.09   0.274     .8042861    2.156759
       Other |   5.94e-07   .0013192    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   1.458029   .4972195     1.11   0.269     .7472878    2.844751
   OtherMale |    4159603   9.24e+09     0.01   0.995            0           .
      tenure |   1.007452   .0095258     0.79   0.432     .9889535    1.026296
         age |   .9769374   .0096684    -2.36   0.018     .9581704     .996072
pyperstude~s |   1.004324   .0062618     0.69   0.489     .9921262    1.016672
pyperstudlep |   1.003494   .0037636     0.93   0.352     .9961444    1.010898
pyperstudb~k |   .5641328   .2144281    -1.51   0.132     .2678168    1.188297
```

```
pyperstudl~o |   .9704249   .0156147    -1.87   0.062     .9402982    1.001517
-------------+----------------------------------------------------------------
3            |
        male |   .6047344   .2060258    -1.48   0.140      .310149    1.179123
       Asian |   4.40e-07    .000679    -0.01   0.992            0           .
       Black |   1.08e-06   .0014474    -0.01   0.992            0           .
      Latino |   1.127988   .2622756     0.52   0.604     .7151321    1.779192
       Other |   3.89e-07   .0008825    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   2.733261   1.032876     2.66   0.008     1.303225    5.732484
   OtherMale |   3.09e+07   7.02e+10     0.01   0.994            0           .
      tenure |   1.040771   .0097052     4.29   0.000     1.021922    1.059967
         age |    1.00698   .0104201     0.67   0.501     .9867624    1.027611
pyperstude~s |    1.02827   .0071705     4.00   0.000     1.014312    1.042421
pyperstudlep |   1.009701   .0038804     2.51   0.012     1.002124    1.017335
pyperstudb~k |   .9210823    .112458    -0.67   0.501     .7250574    1.170104
pyperstudl~o |   .9423763   .0149467    -3.74   0.000     .9135319    .9721314
------------------------------------------------------------------------------


--------->  region = 2

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -805.14718
Iteration 1:   log likelihood = -763.28873
Iteration 2:   log likelihood = -762.31216
Iteration 3:   log likelihood = -761.69432
Iteration 4:   log likelihood = -761.68684
Iteration 5:   log likelihood = -761.68508
Iteration 6:   log likelihood = -761.68466
Iteration 7:   log likelihood = -761.68457
Iteration 8:   log likelihood = -761.68456

Multinomial logistic regression                 Number of obs   =        855
                                                LR chi2(26)     =      86.93
                                                Prob > chi2     =     0.0000
Log likelihood = -761.68456                     Pseudo R2       =     0.0540

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   1.564344   .4403002     1.59   0.112     .9010586    2.715885
       Asian |  (omitted)
       Black |   2.161312   1.327636     1.25   0.210     .6484061    7.204231
      Latino |    .974127   .2834182    -0.09   0.928     .5507596    1.722936
       Other |    7822513   6.43e+09     0.02   0.985            0           .
   AsianMale |  (omitted)
   BlackMale |   2.207217   2.463536     0.71   0.478     .2476256    19.67409
  LatinoMale |   1.380052   .5620743     0.79   0.429      .621175    3.066034
   OtherMale |   7.50e-07    .000617    -0.02   0.986            0           .
      tenure |   1.009575   .0144643     0.67   0.506     .9816199    1.038326
         age |   .9733095   .0148601    -1.77   0.076     .9446157    1.002875
pyperstude~s |    1.00084    .006733     0.12   0.901     .9877306    1.014124
pyperstudlep |   .9815485   .0173244    -1.06   0.291     .9481739    1.016098
pyperstudb~k |   1.012241    .019558     0.63   0.529     .9746245    1.051309
pyperstudl~o |   1.004241   .0071746     0.59   0.554     .9902773    1.018402
-------------+----------------------------------------------------------------
3            |
        male |   1.680177   .4112051     2.12   0.034     1.039998    2.714422
       Asian |  (omitted)
       Black |   .3941208   .4252862    -0.86   0.388     .0475465    3.266934
      Latino |   1.390318   .3455576     1.33   0.185     .8541841    2.262958
```

```
       Other |   2.728315   4032.941     0.00   0.999            0           .
   AsianMale |  (omitted)
   BlackMale |   14.00043   19.52314     1.89   0.058     .9102657    215.3349
  LatinoMale |   1.122647   .3921642     0.33   0.741     .5661096    2.226311
   OtherMale |   2.42e-06   .0040224    -0.01   0.994            0           .
      tenure |   1.017368    .011845     1.48   0.139     .9944155    1.040851
         age |   1.029295   .0132792     2.24   0.025     1.003595    1.055654
pyperstude~s |   1.024536   .0060143     4.13   0.000     1.012815    1.036392
pyperstudlep |   .9926805   .0134922    -0.54   0.589     .9665854     1.01948
pyperstudb~k |   .9600183   .0203906    -1.92   0.055     .9208739    1.000827
pyperstudl~o |   .9783946   .0057099    -3.74   0.000     .9672672    .9896501
------------------------------------------------------------------------------


---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -335.23824
Iteration 1:   log likelihood = -303.42121
Iteration 2:   log likelihood = -300.77339
Iteration 3:   log likelihood = -300.08501
Iteration 4:   log likelihood = -300.02205
Iteration 5:   log likelihood = -300.00647
Iteration 6:   log likelihood = -300.00333
Iteration 7:   log likelihood = -300.00265
Iteration 8:   log likelihood =  -300.0025
Iteration 9:   log likelihood = -300.00246
Iteration 10:  log likelihood = -300.00246

Multinomial logistic regression                 Number of obs   =        331
                                                LR chi2(24)     =      70.47
                                                Prob > chi2     =     0.0000
Log likelihood = -300.00246                     Pseudo R2       =     0.1051

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   1.222337   .4884721     0.50   0.615     .5585119    2.675158
       Asian |  (omitted)
       Black |     5.7588   4.778304     2.11   0.035     1.132547    29.28246
      Latino |   4.725587   3.929969     1.87   0.062     .9259035    24.11825
       Other |   2.83e-07   .0009449    -0.00   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   .2377482   .3651033    -0.94   0.350     .0117206    4.822631
  LatinoMale |   .7543511   .8229565    -0.26   0.796     .0889116    6.400127
   OtherMale |  (omitted)
      tenure |    .983977   .0221787    -0.72   0.474     .9414538    1.028421
         age |   .9827125   .0257869    -0.66   0.506     .9334488    1.034576
pyperstude~s |   .9773094   .0151929    -1.48   0.140     .9479808    1.007545
pyperstudlep |   1.041466   .0420727     1.01   0.315     .9621845    1.127279
pyperstudb~k |   1.048255   .0237311     2.08   0.037     1.002759    1.095814
pyperstudl~o |   1.036424    .015717     2.36   0.018     1.006072    1.067691
-------------+----------------------------------------------------------------
3            |
        male |   2.543921   .7579367     3.13   0.002     1.418719    4.561534
       Asian |  (omitted)
       Black |   4.916215   4.017558     1.95   0.051     .9908876    24.39144
      Latino |   1.07e-07    .000258    -0.01   0.995            0           .
       Other |   1.666549   2.392124     0.36   0.722     .1000055    27.77232
   AsianMale |  (omitted)
   BlackMale |   3.19e-08   .0000666    -0.01   0.993            0           .
  LatinoMale |   3.44e+07   8.29e+10     0.01   0.994            0           .
```

```
   OtherMale |  (omitted)
      tenure |   .9826928   .0158994    -1.08   0.281     .9520194    1.014354
         age |   1.040296   .0218699     1.88   0.060     .9983026    1.084055
pyperstude~s |   1.024181   .0114869     2.13   0.033     1.001913    1.046944
pyperstudlep |   1.042315   .0338396     1.28   0.202     .9780567    1.110795
pyperstudb~k |   .9909118   .0164018    -0.55   0.581     .9592808    1.023586
pyperstudl~o |   .9770516   .0100536    -2.26   0.024     .9575442    .9969564
------------------------------------------------------------------------------

---------->  region = 4

Iteration 0:   log likelihood = -4157.1179
Iteration 1:   log likelihood = -3916.3632
Iteration 2:   log likelihood = -3906.4162
Iteration 3:   log likelihood = -3906.3864
Iteration 4:   log likelihood = -3906.3864

Multinomial logistic regression                 Number of obs   =       4102
                                                LR chi2(30)     =     501.46
                                                Prob > chi2     =     0.0000
Log likelihood = -3906.3864                     Pseudo R2       =     0.0603

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   1.334733   .1262215     3.05   0.002     1.108917    1.606534
       Asian |   .9096129   .7526133    -0.11   0.909     .1797103    4.604054
       Black |   .8800312   .1163731    -0.97   0.334     .6791057    1.140404
      Latino |   1.417511   .2806729     1.76   0.078     .9615788    2.089622
       Other |   1.154599   .7310548     0.23   0.820     .3337935    3.993783
   AsianMale |   .5296551   .7303383    -0.46   0.645     .0355039    7.901508
   BlackMale |   1.671591   .3153135     2.72   0.006     1.154961    2.419317
  LatinoMale |   1.423911   .4361469     1.15   0.249     .7811921     2.59542
   OtherMale |   1.965605   2.044601     0.65   0.516     .2559089    15.09756
      tenure |   1.013914   .0056328     2.49   0.013     1.002933    1.025014
         age |   .9758718   .0053278    -4.47   0.000     .9654852    .9863701
pyperstude~s |   .9998778   .0027038    -0.05   0.964     .9945925    1.005191
pyperstudlep |    1.00048    .004904     0.10   0.922     .9909143    1.010138
pyperstudb~k |    .990546   .0023544    -4.00   0.000     .9859422    .9951713
pyperstudl~o |   .9971906   .0031666    -0.89   0.376     .9910034    1.003416
-------------+----------------------------------------------------------------
3            |
        male |   1.400864   .1479147     3.19   0.001     1.138988    1.722951
       Asian |   .9620026   .8062019    -0.05   0.963     .1861361    4.971893
       Black |   .3951961    .066519    -5.52   0.000     .2841445    .5496497
      Latino |   2.455493   .4853566     4.54   0.000     1.666821    3.617334
       Other |   .4778739   .5160472    -0.68   0.494     .0575594    3.967438
   AsianMale |   .8627542   1.059454    -0.12   0.904     .0777356    9.575342
   BlackMale |   2.277613   .5205799     3.60   0.000     1.455211    3.564788
  LatinoMale |   .8591865   .2884702    -0.45   0.651     .4449367    1.659116
   OtherMale |   2.731603   4.463246     0.62   0.539     .1110746    67.17699
      tenure |   1.077055   .0066694    11.99   0.000     1.064062    1.090206
         age |   1.001912   .0063967     0.30   0.765     .9894526    1.014528
pyperstude~s |   1.028069   .0032295     8.81   0.000     1.021759    1.034418
pyperstudlep |   1.009169    .005537     1.66   0.096     .9983744    1.020079
pyperstudb~k |   .9788429   .0028871    -7.25   0.000     .9732006     .984518
pyperstudl~o |    .969798     .00384    -7.75   0.000      .962301    .9773535
------------------------------------------------------------------------------


---------->  region = 5

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
```

```
Iteration 0:   log likelihood = -555.71035
Iteration 1:   log likelihood = -496.83324
Iteration 2:   log likelihood = -494.82667
Iteration 3:   log likelihood = -494.66441
Iteration 4:   log likelihood = -494.63014
Iteration 5:   log likelihood = -494.62239
Iteration 6:   log likelihood =  -494.6212
Iteration 7:   log likelihood = -494.62106
Iteration 8:   log likelihood = -494.62103

Multinomial logistic regression                 Number of obs   =        581
                                                LR chi2(26)     =     122.18
                                                Prob > chi2     =     0.0000
Log likelihood = -494.62103                     Pseudo R2       =     0.1099

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   3.148305   .8933809     4.04   0.000      1.80524    5.490584
       Asian |   1.390668   6115.738     0.00   1.000            0           .
       Black |   1.832109   .7503629     1.48   0.139     .8209771     4.08857
      Latino |   8.163086   10.70062     1.60   0.109     .6252484    106.5752
       Other |   9.47e-07    .001024    -0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   .5461652   .3047621    -1.08   0.278     .1829576    1.630413
  LatinoMale |   .0800183   .1458979    -1.39   0.166     .0022449     2.85227
   OtherMale |  (omitted)
      tenure |   1.062476   .0179149     3.59   0.000     1.027937    1.098175
         age |   .9512901   .0180857    -2.63   0.009     .9164952     .987406
pyperstude~s |    .995317   .0086856    -0.54   0.591     .9784383    1.012487
pyperstudlep |   .9578221   .0346742    -1.19   0.234     .8922168    1.028251
pyperstudb~k |   1.001523   .0066345     0.23   0.818     .9886037    1.014611
pyperstudl~o |   1.025105   .0241352     1.05   0.292     .9788756    1.073517
-------------+----------------------------------------------------------------
3            |
        male |   5.987787   1.603274     6.68   0.000     3.542835    10.12003
       Asian |   2.13e+07   4.49e+10     0.01   0.994            0           .
       Black |   1.999173   .8686776     1.59   0.111      .853076    4.685038
      Latino |    .000019   .0133682    -0.02   0.988            0           .
       Other |   1.34e-06   .0012639    -0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |   .4609216   .2618451    -1.36   0.173     .1513797    1.403416
  LatinoMale |   .0625222   62.46257    -0.00   0.998            0           .
   OtherMale |  (omitted)
      tenure |   1.051123   .0149186     3.51   0.000     1.022286    1.080773
         age |    1.00375   .0164345     0.23   0.819     .9720507    1.036484
pyperstude~s |   1.038229   .0083221     4.68   0.000     1.022046    1.054669
pyperstudlep |   .9679294     .03217    -0.98   0.327      .906887     1.03308
pyperstudb~k |   .9721494   .0062754    -4.38   0.000     .9599273    .9845271
pyperstudl~o |     .98772   .0207748    -0.59   0.557     .9478301    1.029289
------------------------------------------------------------------------------


--------->  region = 6

Iteration 0:   log likelihood = -692.35303
Iteration 1:   log likelihood = -650.24211
Iteration 2:   log likelihood = -648.64834
Iteration 3:   log likelihood = -648.38862
Iteration 4:   log likelihood =  -648.3368
Iteration 5:   log likelihood = -648.32491
Iteration 6:   log likelihood = -648.32299
Iteration 7:   log likelihood = -648.32252
Iteration 8:   log likelihood = -648.32242
```

```
Iteration 9:   log likelihood =  -648.3224

Multinomial logistic regression                 Number of obs   =        666
                                                LR chi2(30)     =      88.06
                                                Prob > chi2     =     0.0000
Log likelihood =  -648.3224                     Pseudo R2       =     0.0636

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   1.704839    .378949     2.40   0.016     1.102757    2.635647
       Asian |   9.11e-07    .001685    -0.01   0.994            0           .
       Black |   .6278747   .4973041    -0.59   0.557     .1329488    2.965252
      Latino |    .262987   .3266455    -1.08   0.282     .0230511    3.000387
       Other |   8.24e-07   .0015245    -0.01   0.994            0           .
   AsianMale |   1.73e+13   5.56e+16     0.01   0.992            0           .
   BlackMale |   7.372538    6.97301     2.11   0.035     1.154897    47.06421
  LatinoMale |   17.73496   30.13012     1.69   0.091     .6349126    495.3889
   OtherMale |    2.2684   4819.451     0.00   1.000            0           .
      tenure |   .9900395   .0132849    -0.75   0.456      .964341    1.016423
         age |   1.005071   .0139576     0.36   0.716     .9780832    1.032803
pyperstude~s |   .9936953   .0075766    -0.83   0.407     .9789558    1.008657
pyperstudlep |   1.033434   .0265598     1.28   0.201     .9826669    1.086823
pyperstudb~k |   .9883373   .0099872    -1.16   0.246     .9689553    1.008107
pyperstudl~o |   1.006146   .0133664     0.46   0.645     .9802868    1.032688
-------------+----------------------------------------------------------------
3            |
        male |   2.864507     .58846     5.12   0.000     1.915077    4.284631
       Asian |   1.73e-06   .0028609    -0.01   0.994            0           .
       Black |   1.132195    .650622     0.22   0.829     .3670912    3.491956
      Latino |   1.23e-06    .000737    -0.02   0.982            0           .
       Other |   1.06e-06   .0017563    -0.01   0.993            0           .
   AsianMale |   580620.1   2.71e+09     0.00   0.998            0           .
   BlackMale |   .8062677    .667838    -0.26   0.795     .1590092    4.088239
  LatinoMale |   657317.3   3.93e+08     0.02   0.982            0           .
   OtherMale |    2303987   3.81e+09     0.01   0.993            0           .
      tenure |   1.006735   .0124857     0.54   0.588     .9825588    1.031507
         age |    1.02471    .013469     1.86   0.063     .9986483    1.051452
pyperstude~s |    1.02387   .0070963     3.40   0.001     1.010056    1.037873
pyperstudlep |   1.020126   .0250456     0.81   0.417     .9722002    1.070415
pyperstudb~k |   .9870241   .0085618    -1.51   0.132     .9703851    1.003948
pyperstudl~o |   .9863189   .0118562    -1.15   0.252     .9633529    1.009832
------------------------------------------------------------------------------


--------->  region = 7

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -968.78354
Iteration 1:   log likelihood = -895.24257
Iteration 2:   log likelihood = -887.76622
Iteration 3:   log likelihood = -886.89841
Iteration 4:   log likelihood = -886.87021
Iteration 5:   log likelihood = -886.86308
Iteration 6:   log likelihood = -886.86172
Iteration 7:   log likelihood =  -886.8615
Iteration 8:   log likelihood = -886.86147

Multinomial logistic regression                 Number of obs   =       1018
                                                LR chi2(28)     =     163.84
                                                Prob > chi2     =     0.0000
Log likelihood = -886.86147                     Pseudo R2       =     0.0846

------------------------------------------------------------------------------
```

```
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |    2.64432   .6458051     3.98   0.000      1.63844    4.267735
       Asian |   1.44e+08   6.97e+11     0.00   0.997            0           .
       Black |   .9761438   .4341163    -0.05   0.957     .4082842    2.333807
      Latino |   1.585541   1.816657     0.40   0.687     .1678421    14.97801
       Other |   5.27e-06   .0047365    -0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |   4.043376   2.231038     2.53   0.011     1.371107    11.92386
  LatinoMale |   1.789068   3.300545     0.32   0.753     .0481167    66.52083
   OtherMale |    1963962   1.77e+09     0.02   0.987            0           .
      tenure |   1.023218   .0140237     1.67   0.094     .9960978    1.051076
         age |   .9787678   .0140052    -1.50   0.134     .9516995    1.006606
pyperstude~s |   .9885836   .0079711    -1.42   0.154     .9730833    1.004331
pyperstudlep |   .9774657    .032685    -0.68   0.495     .9154585    1.043673
pyperstudb~k |    1.00948   .0074003     1.29   0.198      .995079    1.024089
pyperstudl~o |   1.030801   .0160344     1.95   0.051     .9998486    1.062712
-------------+----------------------------------------------------------------
3            |
        male |   2.292618   .3856958     4.93   0.000     1.648659    3.188104
       Asian |   1.793201   14729.12     0.00   1.000            0           .
       Black |   .7731724   .2637268    -0.75   0.451     .3962178    1.508755
      Latino |   .2793413   .3310131    -1.08   0.282      .027383    2.849639
       Other |   5.55e-06   .0031619    -0.02   0.983            0           .
   AsianMale |  (omitted)
   BlackMale |   2.046438   1.002206     1.46   0.144     .7836786    5.343911
  LatinoMale |   3.204676   6.019952     0.62   0.535     .0806883    127.2793
   OtherMale |   306272.1   1.74e+08     0.02   0.982            0           .
      tenure |   1.006192   .0097856     0.63   0.526     .9871945    1.025556
         age |   1.032135   .0108629     3.01   0.003     1.011062    1.053647
pyperstude~s |   1.037701   .0061357     6.26   0.000     1.025745    1.049797
pyperstudlep |   1.008366    .021278     0.39   0.693     .9675122    1.050944
pyperstudb~k |   .9726693   .0055242    -4.88   0.000     .9619021    .9835571
pyperstudl~o |    .993197    .012941    -0.52   0.600     .9681542    1.018888
------------------------------------------------------------------------------

---------->  region = 8

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -308.18739
Iteration 1:   log likelihood = -277.01893
Iteration 2:   log likelihood = -275.16189
Iteration 3:   log likelihood =  -274.9162
Iteration 4:   log likelihood = -274.87064
Iteration 5:   log likelihood = -274.86063
Iteration 6:   log likelihood = -274.85836
Iteration 7:   log likelihood = -274.85781
Iteration 8:   log likelihood =  -274.8577
Iteration 9:   log likelihood = -274.85768

Multinomial logistic regression                 Number of obs   =        315
                                                LR chi2(28)     =      66.66
                                                Prob > chi2     =     0.0001
Log likelihood = -274.85768                     Pseudo R2       =     0.1081

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |    3.40294   1.458665     2.86   0.004     1.468886    7.883526
       Asian |   4.44e-07   .0014448    -0.00   0.996            0           .
       Black |    3.00867   2.435954     1.36   0.174     .6154653    14.70772
```

```
      Latino |   6.14e-07   .0014105    -0.01   0.995           0           .
       Other |   9.44e-07   .0017218    -0.01   0.994           0           .
   AsianMale |  (omitted)
   BlackMale |    1.43722   1.564581     0.33   0.739    .1701733    12.13822
  LatinoMale |     756734   4.21e+09     0.00   0.998           0           .
   OtherMale |   563783.5   3.04e+09     0.00   0.998           0           .
      tenure |   1.003822    .024104     0.16   0.874    .9576739    1.052195
         age |   1.006746   .0253452     0.27   0.789    .9582756    1.057667
pyperstude~s |   .9700994   .0153644    -1.92   0.055    .9404484    1.000685
pyperstudlep |   1.012234   .0809086     0.15   0.879    .8654537    1.183908
pyperstudb~k |   1.028821    .016117     1.81   0.070    .9977127      1.0609
pyperstudl~o |   1.015324   .0525673     0.29   0.769    .9173495    1.123763
-------------+----------------------------------------------------------------
3            |
        male |   3.980262   1.196662     4.59   0.000    2.207998    7.175045
       Asian |   1.57e-07   .0003396    -0.01   0.994           0           .
       Black |   1.542588   1.179359     0.57   0.571    .3447294    6.902736
      Latino |   7.45e-07   .0011336    -0.01   0.993           0           .
       Other |   8.22e-07   .0010167    -0.01   0.991           0           .
   AsianMale |  (omitted)
   BlackMale |   1.114927   1.173442     0.10   0.918    .1417006    8.772463
  LatinoMale |   8.76e+12   2.44e+16     0.01   0.991           0           .
   OtherMale |   7.13e+12   1.88e+16     0.01   0.991           0           .
      tenure |   1.013982   .0186935     0.75   0.451     .977997     1.05129
         age |    .996399   .0190178    -0.19   0.850    .9598133    1.034379
pyperstude~s |    1.03056     .01081     2.87   0.004    1.009589    1.051966
pyperstudlep |   .9914027   .0608509    -0.14   0.888    .8790317    1.118139
pyperstudb~k |   .9832484   .0103363    -1.61   0.108    .9631969    1.003717
pyperstudl~o |    .993997   .0384597    -0.16   0.876    .9214046    1.072308
------------------------------------------------------------------------------


---------->  region = 9

note: Asian omitted because of collinearity
note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -199.43542
Iteration 1:   log likelihood = -173.91278
Iteration 2:   log likelihood = -171.75635
Iteration 3:   log likelihood = -171.58353
Iteration 4:   log likelihood = -171.55018
Iteration 5:   log likelihood = -171.54256
Iteration 6:   log likelihood = -171.54074
Iteration 7:   log likelihood = -171.54037
Iteration 8:   log likelihood = -171.54031
Iteration 9:   log likelihood =  -171.5403

Multinomial logistic regression                 Number of obs   =        215
                                                LR chi2(22)     =      55.79
                                                Prob > chi2     =     0.0001
Log likelihood =  -171.5403                     Pseudo R2       =     0.1399

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   2.518121   1.578385     1.47   0.141     .7371136    8.602386
       Asian |  (omitted)
       Black |   4.469011   7.044647     0.95   0.342     .2034392     98.1721
      Latino |   17.11846   99433.28     0.00   1.000           0           .
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   2.82e-08   .0000767    -0.01   0.995           0           .
```

```
  LatinoMale |   3.52e-09   .0000267    -0.00   0.998           0           .
   OtherMale |  (omitted)
      tenure |   1.040925   .0382437     1.09   0.275     .9686035    1.118646
         age |    .973697   .0400273    -0.65   0.517     .8983222    1.055396
pyperstude~s |   .9449385   .0296598    -1.80   0.071     .8885584    1.004896
pyperstudlep |   .6892917   .2215037    -1.16   0.247     .3671721    1.294006
pyperstudb~k |   1.085224   .0390635     2.27   0.023     1.011299    1.164553
pyperstudl~o |   1.044865   .0412633     1.11   0.266     .9670413    1.128952
-------------+----------------------------------------------------------------
3            |
        male |   3.418804   1.183605     3.55   0.000     1.734541    6.738512
       Asian |  (omitted)
       Black |   4.837024   6.085648     1.25   0.210     .4108169    56.95188
      Latino |    2840679   6.43e+09     0.01   0.995           0           .
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   3.89e-08   .0000501    -0.01   0.989           0           .
  LatinoMale |   5.14e-14   1.64e-10    -0.01   0.992           0           .
   OtherMale |  (omitted)
      tenure |   1.019273    .020602     0.94   0.345     .9796826    1.060462
         age |   1.021249   .0232441     0.92   0.356     .9766925    1.067838
pyperstude~s |   1.046477   .0142664     3.33   0.001     1.018886    1.074815
pyperstudlep |   .8942719   .0863142    -1.16   0.247     .7401377    1.080505
pyperstudb~k |   .9745255   .0178892    -1.41   0.160     .9400865    1.010226
pyperstudl~o |    .997916   .0214636    -0.10   0.923     .9567226    1.040883
------------------------------------------------------------------------------


---------->  region = 10

Iteration 0:   log likelihood = -2716.6146
Iteration 1:   log likelihood = -2577.2069
Iteration 2:   log likelihood = -2573.6384
Iteration 3:   log likelihood = -2572.9997
Iteration 4:   log likelihood =  -2572.906
Iteration 5:   log likelihood = -2572.8952
Iteration 6:   log likelihood =  -2572.893
Iteration 7:   log likelihood = -2572.8925
Iteration 8:   log likelihood = -2572.8924
Iteration 9:   log likelihood = -2572.8924

Multinomial logistic regression                 Number of obs   =       2636
                                                LR chi2(30)     =     287.44
                                                Prob > chi2     =     0.0000
Log likelihood = -2572.8924                     Pseudo R2       =     0.0529

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   1.743783   .2106744     4.60   0.000     1.376116    2.209683
       Asian |   1.01e-06   .0006272    -0.02   0.982           0           .
       Black |   1.600139    .295477     2.55   0.011     1.114237    2.297937
      Latino |   2.601877   .7064009     3.52   0.000     1.528228     4.42981
       Other |   .6403349   .4975708    -0.57   0.566     .1396313     2.93651
   AsianMale |    1477433   9.19e+08     0.02   0.982           0           .
   BlackMale |   1.464625   .3912308     1.43   0.153     .8676679    2.472291
  LatinoMale |   .5750072   .2314298    -1.37   0.169     .2612644    1.265512
   OtherMale |   9.02e-07   .0004808    -0.03   0.979           0           .
      tenure |   1.026022   .0070018     3.76   0.000      1.01239    1.039838
         age |   .9752989   .0067474    -3.62   0.000     .9621635    .9886137
pyperstude~s |   .9939783   .0036998    -1.62   0.105     .9867533    1.001256
pyperstudlep |   .9983987   .0073108    -0.22   0.827     .9841721    1.012831
pyperstudb~k |   .9995545   .0033123    -0.13   0.893     .9930835    1.006068
pyperstudl~o |   1.005484   .0048255     1.14   0.254      .996071    1.014987
```

```
-------------+----------------------------------------------------------------
3            |
        male |   1.697925   .1964987     4.57   0.000     1.353349    2.130232
       Asian |   .8341439   .5020002    -0.30   0.763     .2564338    2.713356
       Black |   1.305232   .2553015     1.36   0.173     .8895979    1.915056
      Latino |    2.96217   .8317976     3.87   0.000     1.708389    5.136097
       Other |   .2139947   .2273243    -1.45   0.147     .0266797    1.716428
   AsianMale |   3.884537   3.044439     1.73   0.083     .8360354    18.04903
   BlackMale |   1.401534   .4083162     1.16   0.247     .7918061    2.480783
  LatinoMale |   .9187694    .372358    -0.21   0.834     .4151761    2.033203
   OtherMale |   4.125635   4.937474     1.18   0.236      .395176    43.07161
      tenure |   1.052201   .0068929     7.77   0.000     1.038778    1.065798
         age |   1.001648   .0068414     0.24   0.810     .9883283    1.015147
pyperstude~s |   1.024193   .0036127     6.78   0.000     1.017137    1.031299
pyperstudlep |   1.002546   .0073852     0.35   0.730     .9881752    1.017126
pyperstudb~k |   .9731917   .0032941    -8.03   0.000     .9667567    .9796694
pyperstudl~o |   .9674013   .0051035    -6.28   0.000     .9574501    .9774559
------------------------------------------------------------------------------


--------->  region = 11

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1920.6683
Iteration 1:   log likelihood = -1738.6853
Iteration 2:   log likelihood = -1735.2771
Iteration 3:   log likelihood = -1734.8986
Iteration 4:   log likelihood = -1734.8369
Iteration 5:   log likelihood = -1734.8232
Iteration 6:   log likelihood = -1734.8199
Iteration 7:   log likelihood = -1734.8192
Iteration 8:   log likelihood =  -1734.819
Iteration 9:   log likelihood =  -1734.819
Iteration 10:  log likelihood =  -1734.819

Multinomial logistic regression                 Number of obs   =       1796
                                                LR chi2(28)     =     371.70
                                                Prob > chi2     =     0.0000
Log likelihood =  -1734.819                     Pseudo R2       =     0.0968

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   1.088828   .1473862     0.63   0.530     .8351001    1.419645
       Asian |   3.45e-07   .0005286    -0.01   0.992            0           .
       Black |   1.930503    .564212     2.25   0.024     1.088671    3.423293
      Latino |   3.449232   1.398414     3.05   0.002     1.558195    7.635248
       Other |   .1538101   .1644425    -1.75   0.080     .0189209    1.250338
   AsianMale |  (omitted)
   BlackMale |     2.0647   .8591579     1.74   0.081      .913392    4.667205
  LatinoMale |   .4826933    .271349    -1.30   0.195     .1603848    1.452712
   OtherMale |   9.24e-07   .0014635    -0.01   0.993            0           .
      tenure |   .9172551    .007891   -10.04   0.000     .9019186    .9328523
         age |   .9912836   .0082412    -1.05   0.292      .975262    1.007568
pyperstude~s |   1.004126   .0045882     0.90   0.368     .9951733    1.013159
pyperstudlep |   1.005804   .0133154     0.44   0.662     .9800419    1.032243
pyperstudb~k |    .988443   .0040765    -2.82   0.005     .9804854    .9964651
pyperstudl~o |   .9835468   .0078036    -2.09   0.037     .9683704    .9989611
-------------+----------------------------------------------------------------
3            |
        male |   1.746092   .2295036     4.24   0.000     1.349542    2.259164
       Asian |   1.737177   2.128419     0.45   0.652     .1573755    19.17569
       Black |   2.457771   .7669439     2.88   0.004     1.333292     4.53062
      Latino |   3.195461   1.442743     2.57   0.010     1.318919    7.741927
```

```
       Other |   1.42e-07   .0001387    -0.02   0.987           0           .
   AsianMale |  (omitted)
   BlackMale |   .6916262   .3382604    -0.75   0.451     .2651954    1.803752
  LatinoMale |   .5902875   .3576365    -0.87   0.384     .1800311     1.93544
   OtherMale |    1110059   1.09e+09     0.01   0.989           0           .
      tenure |    .944557   .0070937    -7.59   0.000     .9307553    .9585633
         age |   1.056565   .0091447     6.36   0.000     1.038793    1.074641
pyperstude~s |   1.040386   .0046927     8.78   0.000     1.031229    1.049624
pyperstudlep |   1.007522   .0142154     0.53   0.595     .9800426    1.035773
pyperstudb~k |   .9638588   .0042923    -8.27   0.000     .9554826    .9723084
pyperstudl~o |   .9514987   .0084643    -5.59   0.000     .9350528    .9682339
------------------------------------------------------------------------------


---------->  region = 12

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -722.65465
Iteration 1:   log likelihood = -668.92378
Iteration 2:   log likelihood = -666.51748
Iteration 3:   log likelihood = -666.43058
Iteration 4:   log likelihood = -666.40936
Iteration 5:   log likelihood = -666.40538
Iteration 6:   log likelihood = -666.40473
Iteration 7:   log likelihood = -666.40457
Iteration 8:   log likelihood = -666.40454
Iteration 9:   log likelihood = -666.40453

Multinomial logistic regression                 Number of obs   =        697
                                                LR chi2(26)     =     112.50
                                                Prob > chi2     =     0.0000
Log likelihood = -666.40453                     Pseudo R2       =     0.0778

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   1.301969    .313708     1.10   0.273      .811904    2.087838
       Asian |   4.11e+07   1.45e+11     0.00   0.996           0           .
       Black |   2.618056   1.171986     2.15   0.032     1.088766    6.295403
      Latino |   2.377569   2.038918     1.01   0.313     .4427647    12.76713
       Other |    1.87431   2.439178     0.48   0.629     .1462546       24.02
   AsianMale |  (omitted)
   BlackMale |   1.025892   .6842154     0.04   0.969     .2775848    3.791472
  LatinoMale |   1.402801   1.799729     0.26   0.792     .1134863    17.33998
   OtherMale |  (omitted)
      tenure |   .9962298   .0148243    -0.25   0.800     .9675944    1.025713
         age |   .9500587   .0147167    -3.31   0.001     .9216479    .9793453
pyperstude~s |   .9806101   .0078835    -2.44   0.015     .9652799    .9961838
pyperstudlep |   1.047681   .0281447     1.73   0.083     .9939456    1.104322
pyperstudb~k |   1.031387   .0095188     3.35   0.001     1.012898    1.050213
pyperstudl~o |   1.008151   .0129327     0.63   0.527     .9831197     1.03382
-------------+----------------------------------------------------------------
3            |
        male |   2.313204   .4474283     4.34   0.000     1.583331    3.379531
       Asian |   1.086522   5977.474     0.00   1.000           0           .
       Black |   2.199592   1.005546     1.72   0.085     .8978721    5.388525
      Latino |    1.88641    1.79592     0.67   0.505     .2919214    12.19007
       Other |   3.62e-06   .0028456    -0.02   0.987           0           .
   AsianMale |  (omitted)
   BlackMale |   .4681612   .3194658    -1.11   0.266     .1228992    1.783372
  LatinoMale |   .7669893    1.06764    -0.19   0.849     .0501103    11.73956
   OtherMale |  (omitted)
      tenure |   1.018576   .0118836     1.58   0.115     .9955484    1.042135
```

```
         age |   .9877139   .0122218    -1.00   0.318     .9640478    1.011961
pyperstude~s |   1.029739   .0066736     4.52   0.000     1.016742    1.042903
pyperstudlep |   .9791052   .0256671    -0.81   0.421      .930069    1.030727
pyperstudb~k |   .9745072   .0069926    -3.60   0.000     .9608978    .9883093
pyperstudl~o |   .9824638   .0104344    -1.67   0.096     .9622241    1.003129
------------------------------------------------------------------------------


--------->  region = 13

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1133.7961
Iteration 1:   log likelihood = -1079.1122
Iteration 2:   log likelihood = -1077.6906
Iteration 3:   log likelihood = -1077.5216
Iteration 4:   log likelihood =  -1077.493
Iteration 5:   log likelihood = -1077.4865
Iteration 6:   log likelihood =  -1077.485
Iteration 7:   log likelihood = -1077.4847
Iteration 8:   log likelihood = -1077.4846
Iteration 9:   log likelihood = -1077.4846

Multinomial logistic regression                 Number of obs   =       1049
                                                LR chi2(26)     =     112.62
                                                Prob > chi2     =     0.0000
Log likelihood = -1077.4846                     Pseudo R2       =     0.0497

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |    1.11973   .2054234     0.62   0.538     .7815442    1.604253
       Asian |  (omitted)
       Black |   2.301357   .9058295     2.12   0.034     1.064009     4.97763
      Latino |   2.584381   .7860934     3.12   0.002      1.42379     4.69102
       Other |   1.27e-06   .0010424    -0.02   0.987            0           .
   AsianMale |  (omitted)
   BlackMale |   3.650705   2.742357     1.72   0.085     .8374647    15.91428
  LatinoMale |   1.148663    .545045     0.29   0.770     .4532047    2.911327
   OtherMale |   521840.4   4.28e+08     0.02   0.987            0           .
      tenure |   1.026855   .0119514     2.28   0.023     1.003696    1.050549
         age |   .9771236   .0108343    -2.09   0.037     .9561179    .9985908
pyperstude~s |   .9878177   .0065986    -1.83   0.067      .974969    1.000836
pyperstudlep |   .9921557   .0155302    -0.50   0.615     .9621792    1.023066
pyperstudb~k |   1.014445   .0079571     1.83   0.067     .9989685    1.030161
pyperstudl~o |   1.016381   .0071547     2.31   0.021     1.002454    1.030501
-------------+----------------------------------------------------------------
3            |
        male |   1.652626   .2780872     2.99   0.003     1.188346    2.298297
       Asian |  (omitted)
       Black |   1.907042   .8108199     1.52   0.129     .8288073    4.388002
      Latino |    1.56753   .5348272     1.32   0.188     .8031439    3.059414
       Other |     .64941   .7602975    -0.37   0.712     .0654597    6.442644
   AsianMale |  (omitted)
   BlackMale |   2.922469   2.255962     1.39   0.165     .6436888    13.26857
  LatinoMale |   1.048198   .5398125     0.09   0.927     .3820162    2.876103
   OtherMale |   1.83e-06   .0016448    -0.01   0.988            0           .
      tenure |   1.035503   .0116172     3.11   0.002     1.012982    1.058524
         age |   1.001129   .0104768     0.11   0.914     .9808037    1.021875
pyperstude~s |   1.022029   .0063483     3.51   0.000     1.009662    1.034548
pyperstudlep |   .9944049     .01537    -0.36   0.717      .964732    1.024991
pyperstudb~k |    .980576   .0077406    -2.48   0.013     .9655215    .9958652
pyperstudl~o |   .9798916   .0068501    -2.91   0.004     .9665573     .99341
------------------------------------------------------------------------------
```

```
---------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -271.11212
Iteration 1:   log likelihood = -234.76426
Iteration 2:   log likelihood = -230.23075
Iteration 3:   log likelihood = -229.15619
Iteration 4:   log likelihood = -229.05342
Iteration 5:   log likelihood = -229.03066
Iteration 6:   log likelihood = -229.02506
Iteration 7:   log likelihood = -229.02392
Iteration 8:   log likelihood = -229.02368
Iteration 9:   log likelihood = -229.02362
Iteration 10:  log likelihood = -229.02361

Multinomial logistic regression                 Number of obs   =        283
                                                LR chi2(26)     =      84.18
                                                Prob > chi2     =     0.0000
Log likelihood = -229.02361                     Pseudo R2       =     0.1552

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   1.880217   .8619677     1.38   0.168      .765566    4.617781
       Asian |  (omitted)
       Black |    5.03061   8.030908     1.01   0.312     .2201685    114.9439
      Latino |   1.87e-06   .0040266    -0.01   0.995            0           .
       Other |   5.30e-06   .0092003    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   .1930017   382.5804    -0.00   0.999            0           .
  LatinoMale |    2418432   5.21e+09     0.01   0.995            0           .
   OtherMale |   1.717658   3998.731     0.00   1.000            0           .
      tenure |   .9801344   .0302515    -0.65   0.516     .9226003    1.041256
         age |   .9475717   .0332399    -1.54   0.125     .8846119    1.015013
pyperstude~s |   .9304195   .0207998    -3.23   0.001     .8905328    .9720928
pyperstudlep |   1.078895   .1578808     0.52   0.604     .8098746    1.437276
pyperstudb~k |   1.158695   .0635896     2.68   0.007     1.040531    1.290278
pyperstudl~o |   1.042166   .0249458     1.73   0.084     .9944022    1.092224
-------------+----------------------------------------------------------------
3            |
        male |    2.81966   .8434893     3.47   0.001     1.568785    5.067924
       Asian |  (omitted)
       Black |   5.47e-07   .0019363    -0.00   0.997            0           .
      Latino |   3.32e-07   .0003899    -0.01   0.990            0           .
       Other |   1.324731   1.975423     0.19   0.850     .0712568      24.628
   AsianMale |  (omitted)
   BlackMale |   8.02e+12   2.95e+16     0.01   0.994            0           .
  LatinoMale |    2475118   2.90e+09     0.01   0.990            0           .
   OtherMale |   .3372881    .704194    -0.52   0.603     .0056345    20.19061
      tenure |   .9988189   .0178874    -0.07   0.947     .9643683      1.0345
         age |    .994836   .0206411    -0.25   0.803     .9551918    1.036126
pyperstude~s |   1.029552   .0108172     2.77   0.006     1.008567    1.050973
pyperstudlep |   1.132349   .0710322     1.98   0.048     1.001347     1.28049
pyperstudb~k |   .9075944   .0292038    -3.01   0.003     .8521235    .9666762
pyperstudl~o |    .980636   .0141438    -1.36   0.175     .9533029    1.008753
------------------------------------------------------------------------------


---------->  region = 15

note: Black omitted because of collinearity
```

```
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -293.75171
Iteration 1:   log likelihood = -260.79714
Iteration 2:   log likelihood = -259.06898
Iteration 3:   log likelihood = -259.01509
Iteration 4:   log likelihood = -259.00317
Iteration 5:   log likelihood = -259.00025
Iteration 6:   log likelihood = -258.99968
Iteration 7:   log likelihood = -258.99959
Iteration 8:   log likelihood = -258.99957

Multinomial logistic regression                 Number of obs   =        298
                                                LR chi2(22)     =      69.50
                                                Prob > chi2     =     0.0000
Log likelihood = -258.99957                     Pseudo R2       =     0.1183

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   .8522178   .3948282    -0.35   0.730     .3437108    2.113041
       Asian |   1.23e-06   .0016841    -0.01   0.992            0           .
       Black |  (omitted)
      Latino |   .8059995   .6396899    -0.27   0.786     .1701256    3.818561
       Other |   7.245648    13055.5     0.00   0.999            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   1.445147   1.287348     0.41   0.679     .2521477    8.282646
   OtherMale |  (omitted)
      tenure |   1.027787   .0269847     1.04   0.297     .9762352     1.08206
         age |   .9615412   .0291136    -1.30   0.195     .9061397     1.02033
pyperstude~s |   .9725992   .0112045    -2.41   0.016     .9508849    .9948094
pyperstudlep |   1.013109   .0244841     0.54   0.590       .96624    1.062252
pyperstudb~k |    1.09138   .0588592     1.62   0.105     .9819062     1.21306
pyperstudl~o |   1.035192   .0134591     2.66   0.008     1.009146     1.06191
-------------+----------------------------------------------------------------
3            |
        male |   3.843046   1.223913     4.23   0.000     2.058682    7.174006
       Asian |   .0000121   .0095996    -0.01   0.989            0           .
       Black |  (omitted)
      Latino |   .6692581   .4902751    -0.55   0.584      .159233    2.812899
       Other |   326525.1   2.72e+08     0.02   0.988            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   1.095289   .8674069     0.11   0.909     .2319663    5.171688
   OtherMale |  (omitted)
      tenure |   .9993253   .0176135    -0.04   0.969      .965393     1.03445
         age |   1.028975   .0195843     1.50   0.133     .9912971    1.068084
pyperstude~s |   1.024872   .0082225     3.06   0.002     1.008882    1.041115
pyperstudlep |   1.034279   .0189553     1.84   0.066     .9977861    1.072106
pyperstudb~k |   .9938565   .0378823    -0.16   0.872     .9223142    1.070948
pyperstudl~o |    .974905   .0086693    -2.86   0.004     .9580606    .9920456
------------------------------------------------------------------------------


---------->  region = 16

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -427.53774
Iteration 1:   log likelihood = -396.30457
Iteration 2:   log likelihood = -393.36704
Iteration 3:   log likelihood = -392.89009
```

```
Iteration 4:   log likelihood = -392.78738
Iteration 5:   log likelihood = -392.76572
Iteration 6:   log likelihood = -392.76128
Iteration 7:   log likelihood = -392.76027
Iteration 8:   log likelihood = -392.76002
Iteration 9:   log likelihood = -392.75997
Iteration 10:  log likelihood = -392.75996

Multinomial logistic regression                 Number of obs   =        418
                                                LR chi2(26)     =      69.56
                                                Prob > chi2     =     0.0000
Log likelihood = -392.75996                     Pseudo R2       =     0.0813

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   1.052016   .3375776     0.16   0.874     .5608976    1.973156
       Asian |  (omitted)
       Black |   1.065906   1.057463     0.06   0.949     .1524966    7.450368
      Latino |   .8469466    1.00675    -0.14   0.889      .082423    8.702893
       Other |   3.70e-07   .0007802    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   .7105377   1.143733    -0.21   0.832     .0302992    16.66261
  LatinoMale |   5.228983   7.934632     1.09   0.276     .2671626    102.3432
   OtherMale |   1.47e+07   3.11e+10     0.01   0.994            0           .
      tenure |   1.046686   .0222219     2.15   0.032     1.004026    1.091159
         age |   .9617933   .0218098    -1.72   0.086      .919983    1.005504
pyperstude~s |   .9570438   .0123925    -3.39   0.001     .9330606    .9816434
pyperstudlep |   .9865412   .0326579    -0.41   0.682     .9245651    1.052672
pyperstudb~k |   1.045493    .022916     2.03   0.042      1.00153    1.091387
pyperstudl~o |   1.033032    .014281     2.35   0.019     1.005418    1.061405
-------------+----------------------------------------------------------------
3            |
        male |   1.745936   .4174884     2.33   0.020      1.09267    2.789766
       Asian |  (omitted)
       Black |   3.12e-07   .0002679    -0.02   0.986            0           .
      Latino |   .2831229   .2606701    -1.37   0.171     .0465883    1.720572
       Other |   2.78e-07   .0003886    -0.01   0.991            0           .
   AsianMale |  (omitted)
   BlackMale |   .9031431   1316.716    -0.00   1.000            0           .
  LatinoMale |   1.535038   2.358926     0.28   0.780     .0755196    31.20172
   OtherMale |    2569312   3.60e+09     0.01   0.992            0           .
      tenure |   1.037376   .0152782     2.49   0.013     1.007859    1.067757
         age |   .9927454   .0155155    -0.47   0.641     .9627966    1.023626
pyperstude~s |   1.012729   .0079356     1.61   0.106      .997294    1.028402
pyperstudlep |   1.044093   .0226883     1.99   0.047     1.000558    1.089521
pyperstudb~k |   .9936574   .0168056    -0.38   0.707      .961259    1.027148
pyperstudl~o |   .9775906   .0097354    -2.28   0.023     .9586946     .996859
------------------------------------------------------------------------------


---------->  region = 17

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -414.28559
Iteration 1:   log likelihood =  -377.1992
Iteration 2:   log likelihood = -374.51524
Iteration 3:   log likelihood = -374.37131
Iteration 4:   log likelihood = -374.35039
Iteration 5:   log likelihood =  -374.3464
Iteration 6:   log likelihood = -374.34554
Iteration 7:   log likelihood = -374.34533
Iteration 8:   log likelihood = -374.34529
```

```
Iteration 9:   log likelihood = -374.34528

Multinomial logistic regression                 Number of obs   =        414
                                                LR chi2(26)     =      79.88
                                                Prob > chi2     =     0.0000
Log likelihood = -374.34528                     Pseudo R2       =     0.0964

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
        male |    .519969   .1281871    -2.65   0.008     .3207245    .8429906
       Asian |  (omitted)
       Black |   .2081968   .2498667    -1.31   0.191      .019811    2.187967
      Latino |   1.340269   .9375854     0.42   0.675     .3401994    5.280198
       Other |   2.03e-07   .0003954    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |    3.34944   6.204051     0.65   0.514     .0887812     126.364
  LatinoMale |   .4255603   .3819765    -0.95   0.341     .0732716    2.471649
   OtherMale |   2.02e+13   5.39e+16     0.01   0.991            0           .
      tenure |   .9997406   .0154838    -0.02   0.987     .9698489    1.030554
         age |   .9708324   .0170184    -1.69   0.091     .9380433    1.004768
pyperstude~s |   .9642311   .0108533    -3.24   0.001     .9431919    .9857396
pyperstudlep |   .9759938   .0221456    -1.07   0.284     .9335403    1.020378
pyperstudb~k |   1.033218   .0153677     2.20   0.028     1.003532    1.063781
pyperstudl~o |   1.035968    .011929     3.07   0.002     1.012849    1.059614
-------------+----------------------------------------------------------------
2            |
        male |   1.511556   .6181384     1.01   0.312     .6781605    3.369117
       Asian |  (omitted)
       Black |   .5757824   .7934339    -0.40   0.689     .0386629    8.574773
      Latino |   1.728278   2.134582     0.44   0.658     .1535683    19.45027
       Other |   8.91e-07   .0029913    -0.00   0.997            0           .
   AsianMale |  (omitted)
   BlackMale |   1.305227   2.538131     0.14   0.891     .0288701    59.00973
  LatinoMale |   .6571583   .9242418    -0.30   0.765      .041737     10.3471
   OtherMale |   8.70e+12   3.32e+16     0.01   0.994            0           .
      tenure |   .9624434   .0227226    -1.62   0.105     .9189227    1.008025
         age |   .9804633   .0242172    -0.80   0.424      .934129    1.029096
pyperstude~s |   .9119574   .0164958    -5.10   0.000     .8801927    .9448684
pyperstudlep |    1.01535   .0347904     0.44   0.657     .9494012     1.08588
pyperstudb~k |   1.114373   .0232814     5.18   0.000     1.069664    1.160951
pyperstudl~o |   1.066385   .0192218     3.57   0.000     1.029369    1.104733
-------------+----------------------------------------------------------------
3            |  (base outcome)
------------------------------------------------------------------------------


---------->  region = 18

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -391.93471
Iteration 1:   log likelihood = -361.26034
Iteration 2:   log likelihood = -358.78667
Iteration 3:   log likelihood = -358.62787
Iteration 4:   log likelihood = -358.61638
Iteration 5:   log likelihood = -358.61434
Iteration 6:   log likelihood = -358.61389
Iteration 7:   log likelihood = -358.61378
Iteration 8:   log likelihood = -358.61376

Multinomial logistic regression                 Number of obs   =        395
                                                LR chi2(24)     =      66.64
                                                Prob > chi2     =     0.0000
Log likelihood = -358.61376                     Pseudo R2       =     0.0850
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   1.307543   .5226908     0.67   0.502     .5972932    2.862359
       Asian |  (omitted)
       Black |   7.926964   11.70445     1.40   0.161     .4388104     143.198
      Latino |   3.944258   2.664692     2.03   0.042     1.049311    14.82609
       Other |   6.29e-06   .0055252    -0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |   1.526066   2.900441     0.22   0.824     .0367943    63.29462
  LatinoMale |    1.20751   1.004994     0.23   0.821     .2362912    6.170697
   OtherMale |  (omitted)
      tenure |   .9867814   .0217636    -0.60   0.546     .9450344    1.030373
         age |   .9881478   .0272404    -0.43   0.665     .9361743    1.043007
pyperstude~s |   .9836727    .014667    -1.10   0.270     .9553419    1.012844
pyperstudlep |   .9801962    .024217    -0.81   0.418     .9338626    1.028829
pyperstudb~k |   1.030872   .0265023     1.18   0.237     .9802152    1.084146
pyperstudl~o |   .9960438   .0135979    -0.29   0.772     .9697457    1.023055
-------------+----------------------------------------------------------------
3            |
        male |   1.781155   .4729232     2.17   0.030      1.05851    2.997149
       Asian |  (omitted)
       Black |   2.377436   3.018477     0.68   0.495     .1974211    28.63019
      Latino |   1.660555   .8862032     0.95   0.342     .5834249    4.726303
       Other |   7.43e-06   .0038882    -0.02   0.982            0           .
   AsianMale |  (omitted)
   BlackMale |   1.084562   1.931832     0.05   0.964     .0330435    35.59774
  LatinoMale |   .6678302   .4550477    -0.59   0.554     .1756598    2.538983
   OtherMale |  (omitted)
      tenure |   1.005655   .0145857     0.39   0.697       .97747    1.034653
         age |   1.021082   .0186457     1.14   0.253      .985183    1.058288
pyperstude~s |   1.050266   .0112238     4.59   0.000     1.028496    1.072496
pyperstudlep |   .9764444   .0126091    -1.85   0.065     .9520412    1.001473
pyperstudb~k |   .9630472   .0217413    -1.67   0.095      .921364    1.006616
pyperstudl~o |    .975595    .009715    -2.48   0.013     .9567386    .9948231
------------------------------------------------------------------------------


---------> region = 19

Iteration 0:   log likelihood = -655.29046
Iteration 1:   log likelihood = -621.65344
Iteration 2:   log likelihood = -620.90557
Iteration 3:   log likelihood = -620.80125
Iteration 4:   log likelihood =  -620.7848
Iteration 5:   log likelihood = -620.78086
Iteration 6:   log likelihood = -620.78002
Iteration 7:   log likelihood = -620.77984
Iteration 8:   log likelihood =  -620.7798
Iteration 9:   log likelihood = -620.77979

Multinomial logistic regression                 Number of obs   =        612
                                                LR chi2(30)     =      69.02
                                                Prob > chi2     =     0.0001
Log likelihood = -620.77979                     Pseudo R2       =     0.0527

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   1.323035   .3666509     1.01   0.312     .7685623    2.277528
```

```
       Asian |    5419644   1.06e+10     0.01   0.994           0           .
       Black |   1.529801   1.022388     0.64   0.525     .4128238    5.668982
      Latino |   1.274755   .3624052     0.85   0.393     .7301885    2.225452
       Other |   1.913545   2.782209     0.45   0.655      .110721    33.07103
   AsianMale |   .7125773   1979.229    -0.00   1.000           0           .
   BlackMale |   .4472491   .4493776    -0.80   0.423     .0624161    3.204808
  LatinoMale |   1.149895    .452543     0.35   0.723     .5317001    2.486852
   OtherMale |   .3039449   1342.968    -0.00   1.000           0           .
      tenure |   1.035481   .0124951     2.89   0.004     1.011278    1.060263
         age |   .9751151   .0132898    -1.85   0.064     .9494124    1.001514
pyperstude~s |    .994867   .0053837    -0.95   0.342     .9843709    1.005475
pyperstudlep |   1.012113   .0067142     1.81   0.070     .9990383    1.025358
pyperstudb~k |   1.013281   .0308181     0.43   0.664     .9546438     1.07552
pyperstudl~o |   1.002337   .0097108     0.24   0.810     .9834838    1.021552
-------------+----------------------------------------------------------------
3            |
        male |   1.277871   .3996907     0.78   0.433     .6922281    2.358982
       Asian |   1.142375    3758.99     0.00   1.000           0           .
       Black |   .2303713   .2617017    -1.29   0.196     .0248579    2.134976
      Latino |   1.272488   .3973819     0.77   0.440     .6899762    2.346784
       Other |   2.05e-06   .0024626    -0.01   0.991           0           .
   AsianMale |   .5328001   2479.371    -0.00   1.000           0           .
   BlackMale |   2.534456   3.654823     0.64   0.519     .1501088    42.79209
  LatinoMale |    .935281   .4160509    -0.15   0.880     .3911048    2.236614
   OtherMale |   2.10e+12   6.63e+15     0.01   0.993           0           .
      tenure |   1.075621   .0151121     5.19   0.000     1.046406    1.105652
         age |   .9879839   .0157265    -0.76   0.448     .9576364    1.019293
pyperstude~s |   .9976435   .0064539    -0.36   0.715     .9850739    1.010374
pyperstudlep |    1.01947   .0076303     2.58   0.010     1.004624    1.034536
pyperstudb~k |   1.023406   .0345946     0.68   0.494     .9577988    1.093507
pyperstudl~o |   1.000193   .0113536     0.02   0.986     .9781862    1.022695
------------------------------------------------------------------------------


--------->  region = 20

Iteration 0:   log likelihood = -1878.6351
Iteration 1:   log likelihood = -1778.2369
Iteration 2:   log likelihood = -1774.4591
Iteration 3:   log likelihood = -1774.2731
Iteration 4:   log likelihood = -1774.2281
Iteration 5:   log likelihood = -1774.2195
Iteration 6:   log likelihood =  -1774.218
Iteration 7:   log likelihood = -1774.2177
Iteration 8:   log likelihood = -1774.2176
Iteration 9:   log likelihood = -1774.2176

Multinomial logistic regression                 Number of obs   =       1983
                                                LR chi2(30)     =     208.84
                                                Prob > chi2     =     0.0000
Log likelihood = -1774.2176                     Pseudo R2       =     0.0556

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |   1.642745   .2503813     3.26   0.001     1.218521     2.21466
       Asian |   1.92e-06   .0013713    -0.02   0.985           0           .
       Black |   1.293885   .4314529     0.77   0.440     .6730662     2.48733
      Latino |    1.01614   .1953477     0.08   0.934     .6971307    1.481128
       Other |   2.981485   2.748765     1.18   0.236     .4894085    18.16326
   AsianMale |   400644.3   2.55e+09     0.00   0.998           0           .
   BlackMale |   1.715954   .7913796     1.17   0.242     .6949294    4.237119
  LatinoMale |    1.58218   .4236728     1.71   0.087     .9361016    2.674169
   OtherMale |    1.37068   1.789683     0.24   0.809     .1060549    17.71501
```

```
      tenure |   1.022034   .0086683     2.57   0.010     1.005185    1.039166
         age |   .9888183   .0086262    -1.29   0.197      .972055    1.005871
pyperstude~s |   1.001369   .0041782     0.33   0.743     .9932129    1.009592
pyperstudlep |   1.000348   .0061934     0.06   0.955     .9882823    1.012561
pyperstudb~k |   .9911594    .007379    -1.19   0.233     .9768018    1.005728
pyperstudl~o |   .9917915   .0047928    -1.71   0.088     .9824422     1.00123
-------------+----------------------------------------------------------------
3            |
        male |    1.71901   .2778938     3.35   0.001     1.252201    2.359843
       Asian |   .7671174   .8780918    -0.23   0.817     .0813808    7.231057
       Black |   1.067924   .3464718     0.20   0.839     .5654326    2.016972
      Latino |   1.046214   .2002909     0.24   0.813     .7188915    1.522571
       Other |      2.076   2.430575     0.62   0.533     .2092392    20.59737
   AsianMale |   2.93e+07   9.26e+10     0.01   0.996            0           .
   BlackMale |    .877207   .4406021    -0.26   0.794     .3277645    2.347698
  LatinoMale |   1.386813   .3760864     1.21   0.228     .8150472    2.359681
   OtherMale |   9.88e-07    .001066    -0.01   0.990            0           .
      tenure |   1.069834   .0092706     7.79   0.000     1.051818    1.088159
         age |   .9958113   .0092751    -0.45   0.652     .9777973    1.014157
pyperstude~s |   1.027976   .0049625     5.72   0.000     1.018295    1.037748
pyperstudlep |   1.019673   .0054081     3.67   0.000     1.009129    1.030328
pyperstudb~k |   .9735302   .0075844    -3.44   0.001     .9587779    .9885095
pyperstudl~o |   .9669541   .0053322    -6.09   0.000     .9565595    .9774617
------------------------------------------------------------------------------


---------->  region = .

note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -56.484205
Iteration 1:   log likelihood = -41.603153
Iteration 2:   log likelihood = -38.687575
Iteration 3:   log likelihood = -38.313203
Iteration 4:   log likelihood = -38.244554
Iteration 5:   log likelihood = -38.228678
Iteration 6:   log likelihood =  -38.22491
Iteration 7:   log likelihood = -38.224148
Iteration 8:   log likelihood = -38.224025
Iteration 9:   log likelihood = -38.223995
Iteration 10:  log likelihood = -38.223988
Iteration 11:  log likelihood = -38.223987

Multinomial logistic regression                 Number of obs   =         65
                                                LR chi2(24)     =      36.52
                                                Prob > chi2     =     0.0488
Log likelihood = -38.223987                     Pseudo R2       =     0.3233

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
        male |    3.78215   4.722234     1.07   0.287     .3273137     43.7032
       Asian |   1.32e-07   .0012279    -0.00   0.999            0           .
       Black |   1.80e-08   .0000463    -0.01   0.994            0           .
      Latino |   4.87e-08    .000238    -0.00   0.997            0           .
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   2.85e+08   7.35e+11     0.01   0.994            0           .
  LatinoMale |   8.21e+07   4.02e+11     0.00   0.997            0           .
   OtherMale |  (omitted)
      tenure |   .9771957   .0744714    -0.30   0.762     .8416123    1.134622
         age |   .8848976   .0740737    -1.46   0.144     .7510001    1.042668
pyperstude~s |   .9816133   .0291284    -0.63   0.532     .9261512    1.040397
```

```
pyperstudlep |   .9491633   .0579771    -0.85   0.393     .8420688    1.069878
pyperstudb~k |    1.07128   .0403899     1.83   0.068     .9949714    1.153441
pyperstudl~o |   1.044087    .027479     1.64   0.101     .9915947    1.099358
-------------+----------------------------------------------------------------
3            |
        male |   .7235273   .7910521    -0.30   0.767     .0848815    6.167323
       Asian |   2.71e-07    .002095    -0.00   0.998            0           .
       Black |   .3802953    .555984    -0.66   0.508     .0216612    6.676675
      Latino |   1.33e-07   .0005226    -0.00   0.997            0           .
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   2.94e-07   .0012694    -0.00   0.997            0           .
  LatinoMale |   3.43e+07   1.35e+11     0.00   0.996            0           .
   OtherMale |  (omitted)
      tenure |   1.136419   .0615564     2.36   0.018     1.021954    1.263705
         age |    1.02726   .0562382     0.49   0.623     .9227424    1.143615
pyperstude~s |   1.009108    .021769     0.42   0.674     .9673314     1.05269
pyperstudlep |   .9348442   .0593974    -1.06   0.289     .8253845     1.05882
pyperstudb~k |   .9965949   .0263606    -0.13   0.897     .9462455    1.049623
pyperstudl~o |   .9997663   .0230172    -0.01   0.992     .9556562    1.045912
------------------------------------------------------------------------------
```

1995-96

```
. mlogit admin  tenure exper  male age pyperstudwhite pyperstudblack pyperstudlatino
pyperstudecodis pyperstudlep pyperstudmobile Asian Black Latino
>  Other AsianMale BlackMale LatinoMale OtherMale if validcert1996==1, rrr

Iteration 0:   log likelihood = -20819.701
Iteration 1:   log likelihood = -19799.402
Iteration 2:   log likelihood = -19778.024
Iteration 3:   log likelihood = -19777.969
Iteration 4:   log likelihood = -19777.969

Multinomial logistic regression                 Number of obs   =      20142
                                                LR chi2(36)     =    2083.47
                                                Prob > chi2     =     0.0000
Log likelihood = -19777.969                     Pseudo R2       =     0.0500

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.003085   .0028382     1.09   0.276     .9975372    1.008663
       exper |   1.000467   .0037256     0.13   0.900     .9931917    1.007796
        male |   1.447696   .0641653     8.35   0.000     1.327242    1.579082
         age |   .9763086   .0031168    -7.51   0.000     .9702189    .9824366
pyperstudw~e |   .9723939   .0045356    -6.00   0.000     .9635448    .9813243
pyperstudb~k |   .9736411   .0047496    -5.48   0.000     .9643765    .9829948
pyperstudl~o |   .9739215   .0045426    -5.67   0.000     .9650586    .9828657
pyperstude~s |   .9934524   .0011368    -5.74   0.000     .9912267     .995683
pyperstudlep |   1.007398   .0016725     4.44   0.000     1.004125    1.010681
pyperstudm~e |   .9994604   .0016771    -0.32   0.748     .9961786    1.002753
       Asian |   .6489475   .2959899    -0.95   0.343     .2654423    1.586533
       Black |   1.397352   .1070644     4.37   0.000     1.202506     1.62377
      Latino |   1.370672   .1019282     4.24   0.000     1.184773     1.58574
       Other |   .6849556    .221774    -1.17   0.243     .3631295    1.292002
   AsianMale |   2.221462   1.352866     1.31   0.190     .6733781    7.328565
   BlackMale |   1.413996   .1573847     3.11   0.002     1.136855    1.758697
  LatinoMale |   1.323382   .1288855     2.88   0.004     1.093417    1.601713
   OtherMale |    1.16675   .5508266     0.33   0.744     .4625113    2.943289
-------------+----------------------------------------------------------------
3            |
      tenure |   1.010309   .0025529     4.06   0.000     1.005318    1.015325
       exper |   1.050035   .0039942    12.84   0.000     1.042236    1.057893
```

```
        male |   1.788917   .0744955    13.97   0.000     1.648708    1.941049
         age |   .9848809   .0033268    -4.51   0.000     .9783821    .9914229
pyperstudw~e |   1.019229   .0057275     3.39   0.001     1.008065    1.030517
pyperstudb~k |   .9978427   .0058741    -0.37   0.714     .9863959    1.009422
pyperstudl~o |   .9942509   .0056484    -1.01   0.310     .9832417    1.005383
pyperstude~s |   1.024502   .0012456    19.91   0.000     1.022063    1.026946
pyperstudlep |   1.009099   .0016415     5.57   0.000     1.005887    1.012321
pyperstudm~e |   .9943656   .0018884    -2.98   0.003     .9906713    .9980736
       Asian |   .7133274   .2847114    -0.85   0.397     .3262478    1.559661
       Black |   .9394072   .0798344    -0.74   0.462     .7952717    1.109666
      Latino |   1.428066   .1060728     4.80   0.000     1.234591     1.65186
       Other |   .4097696   .1588152    -2.30   0.021      .191707    .8758738
   AsianMale |   1.905007    1.02935     1.19   0.233      .660631    5.493311
   BlackMale |   1.152022   .1443401     1.13   0.259     .9011798    1.472686
  LatinoMale |   .9327766   .0916724    -0.71   0.479     .7693472    1.130923
   OtherMale |   3.085111   1.501215     2.32   0.021     1.188711    8.006918
------------------------------------------------------------------------------

. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=20142)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     16.603    2    0.000
       exper |    187.037    2    0.000
        male |    215.180    2    0.000
         age |     64.357    2    0.000
pyperstudw~e |     66.628    2    0.000
pyperstudb~k |     31.336    2    0.000
pyperstudl~o |     32.089    2    0.000
pyperstude~s |    576.123    2    0.000
pyperstudlep |     38.402    2    0.000
pyperstudm~e |      9.465    2    0.009
       Asian |      1.408    2    0.495
       Black |     22.469    2    0.000
      Latino |     31.551    2    0.000
       Other |      6.892    2    0.032
   AsianMale |      2.512    2    0.285
   BlackMale |      9.714    2    0.008
  LatinoMale |     11.845    2    0.003
   OtherMale |      5.845    2    0.054
---------------------------------------

**** Wald tests for independent variables (N=20142)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     16.530    2    0.000
       exper |    177.196    2    0.000
        male |    213.513    2    0.000
         age |     63.252    2    0.000
pyperstudw~e |     66.793    2    0.000
pyperstudb~k |     31.930    2    0.000
pyperstudl~o |     32.709    2    0.000
pyperstude~s |    533.973    2    0.000
pyperstudlep |     38.105    2    0.000
pyperstudm~e |      9.068    2    0.011
       Asian |      1.358    2    0.507
       Black |     22.965    2    0.000
      Latino |     31.609    2    0.000
       Other |      5.989    2    0.050
   AsianMale |      2.452    2    0.293
```

```
   BlackMale |      9.693    2    0.008
  LatinoMale |     11.828    2    0.003
   OtherMale |      5.397    2    0.067
-------------------------------------

**** Hausman tests of IIA assumption (N=20142)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+-----------------------------------
       2 |   -79.802   17     ---    ---
       3 |    -6.145   18     ---    ---
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=20142)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+-----------------------------------------------------
       2 |  -4688.852  -4681.022  15.660   19    0.680   for Ho
       3 |  -4542.981  -4531.645  22.672   19    0.252   for Ho
-------------------------------------------------------------------

**** Wald tests for combining alternatives (N=20142)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1214.514   18    0.000
       2-       1  |  491.694   18    0.000
       3-       1  | 1211.782   18    0.000
-----------------------------------------------

**** LR tests for combining alternatives (N=20142)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1358.777   18    0.000
       2-       1  |  505.360   18    0.000
       3-       1  | 1363.451   18    0.000
-----------------------------------------------
by region
. bysort region: mlogit admin  tenure exper  male age pyperstudwhite pyperstudblack
pyperstudlatino pyperstudecodis pyperstudlep pyperstudmobile Asian B
> lack Latino Other AsianMale BlackMale LatinoMale OtherMale if validcert1996==1, rrr


---------->  region = 1

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -1376.578
Iteration 1:   log likelihood = -1278.5012
Iteration 2:   log likelihood = -1275.1004
Iteration 3:   log likelihood = -1274.8676
Iteration 4:   log likelihood = -1274.8126
Iteration 5:   log likelihood = -1274.8014
Iteration 6:   log likelihood =  -1274.799
Iteration 7:   log likelihood = -1274.7985
```

```
Iteration 8:   log likelihood = -1274.7983
Iteration 9:   log likelihood = -1274.7983

Multinomial logistic regression                 Number of obs   =       1293
                                                LR chi2(34)     =     203.56
                                                Prob > chi2     =     0.0000
Log likelihood = -1274.7983                     Pseudo R2       =     0.0739

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9990478   .0104942    -0.09   0.928     .9786898    1.019829
       exper |   1.034501   .0164247     2.14   0.033     1.002805    1.067199
        male |   1.371475   .3942823     1.10   0.272     .7806884    2.409339
         age |   .9487964   .0131926    -3.78   0.000     .9232885    .9750091
pyperstudw~e |   1.156294   .1223792     1.37   0.170     .9396785    1.422844
pyperstudb~k |   1.168566    .130975     1.39   0.165     .9380996    1.455652
pyperstudl~o |   1.154073   .1167158     1.42   0.157     .9465602     1.40708
pyperstude~s |   .9967288   .0037794    -0.86   0.388     .9893487    1.004164
pyperstudlep |   .9995772   .0036136    -0.12   0.907     .9925198    1.006685
pyperstudm~e |   1.004083   .0091689     0.45   0.655      .986272    1.022215
       Asian |   8.33e-07    .001111    -0.01   0.992            0           .
       Black |   9.06e-07   .0012058    -0.01   0.992            0           .
      Latino |   1.021713   .2384879     0.09   0.927     .6466091    1.614418
       Other |   5.69e-07   .0010703    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |    1849618   2.46e+09     0.01   0.991            0           .
  LatinoMale |   1.745824   .5685632     1.71   0.087     .9221242    3.305306
   OtherMale |   1.92e+12   4.03e+15     0.01   0.989            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.005931   .0103162     0.58   0.564     .9859138    1.026355
       exper |    1.11498   .0221182     5.49   0.000     1.072461    1.159184
        male |   .7094113   .2498917    -0.97   0.330     .3556809    1.414932
         age |     .94295   .0168546    -3.29   0.001     .9104875    .9765699
pyperstudw~e |   1.010611   .1022485     0.10   0.917     .8288267    1.232266
pyperstudb~k |   .9571811   .1090789    -0.38   0.701     .7655833    1.196729
pyperstudl~o |   .9639072   .0935808    -0.38   0.705     .7968864    1.165934
pyperstude~s |   1.016987   .0053109     3.23   0.001     1.006631    1.027449
pyperstudlep |   1.017354    .003938     4.44   0.000     1.009665    1.025102
pyperstudm~e |   1.010871   .0097113     1.13   0.260     .9920151    1.030085
       Asian |   2.81e-07   .0003887    -0.01   0.991            0           .
       Black |   2.54e-06    .003585    -0.01   0.993            0           .
      Latino |   1.131013   .2701679     0.52   0.606     .7081723    1.806326
       Other |   3.83e-07   .0007777    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   .7917891   1421.314    -0.00   1.000            0           .
  LatinoMale |   2.571278   .9979089     2.43   0.015     1.201708    5.501726
   OtherMale |   1.65e+13   3.67e+16     0.01   0.989            0           .
------------------------------------------------------------------------------


---------->  region = 2

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -812.80728
Iteration 1:   log likelihood = -760.58661
Iteration 2:   log likelihood = -757.04136
Iteration 3:   log likelihood = -756.18323
Iteration 4:   log likelihood = -756.08109
Iteration 5:   log likelihood =  -756.0626
Iteration 6:   log likelihood = -756.05859
Iteration 7:   log likelihood = -756.05759
```

```
Iteration 8:   log likelihood = -756.05739
Iteration 9:   log likelihood = -756.05735
Iteration 10:  log likelihood = -756.05734

Multinomial logistic regression                 Number of obs   =        853
                                                LR chi2(32)     =     113.50
                                                Prob > chi2     =     0.0000
Log likelihood = -756.05734                     Pseudo R2       =     0.0698

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.015866   .0177207     0.90   0.367     .9817215    1.051199
       exper |   .9712062   .0210054    -1.35   0.177     .9308968    1.013261
        male |   1.578083   .4310462     1.67   0.095     .9239065    2.695452
         age |   .9819291   .0159527    -1.12   0.262     .9511549    1.013699
pyperstudw~e |   1.035895   .0679085     0.54   0.591      .910993    1.177923
pyperstudb~k |   1.033862   .0700794     0.49   0.623     .9052422    1.180757
pyperstudl~o |   1.032054   .0645771     0.50   0.614     .9129383    1.166711
pyperstude~s |   1.004733   .0054496     0.87   0.384     .9941081    1.015471
pyperstudlep |   .9837735   .0198095    -0.81   0.417     .9457038    1.023376
pyperstudm~e |   1.002022   .0090721     0.22   0.823     .9843978    1.019961
       Asian |  (omitted)
       Black |   3.920933   2.296221     2.33   0.020     1.244225    12.35605
      Latino |   .9542578   .2725833    -0.16   0.870     .5451555    1.670364
       Other |   6.008311   7.505031     1.44   0.151     .5194091    69.50168
   AsianMale |  (omitted)
   BlackMale |   .5652108   .5506256    -0.59   0.558     .0837479    3.814581
  LatinoMale |   1.429823    .576024     0.89   0.375     .6491781    3.149203
   OtherMale |   1.020056   1.808668     0.01   0.991     .0315757    32.95299
-------------+----------------------------------------------------------------
3            |
      tenure |   .9918381   .0129126    -0.63   0.529     .9668501    1.017472
       exper |    1.09103   .0217174     4.38   0.000     1.049284    1.134437
        male |    1.71906   .4318119     2.16   0.031     1.050696    2.812581
         age |   .9732199   .0168129    -1.57   0.116     .9408188    1.006737
pyperstudw~e |   1.077973   .0604231     1.34   0.180     .9658188     1.20315
pyperstudb~k |   1.070275   .0628045     1.16   0.247     .9539956    1.200728
pyperstudl~o |    1.05246   .0562545     0.96   0.339     .9477824      1.1687
pyperstude~s |   1.020449   .0055013     3.75   0.000     1.009723    1.031288
pyperstudlep |   1.015759   .0148552     1.07   0.285      .987057    1.045296
pyperstudm~e |   .9947443   .0092885    -0.56   0.573     .9767047    1.013117
       Asian |  (omitted)
       Black |   5.61e-07   .0004504    -0.02   0.986            0           .
      Latino |   1.187462   .3029678     0.67   0.501     .7201867    1.957918
       Other |   4.72e-07   .0017349    -0.00   0.997            0           .
   AsianMale |  (omitted)
   BlackMale |    3884648   3.12e+09     0.02   0.985            0           .
  LatinoMale |    1.20568   .4298559     0.52   0.600     .5994553    2.424975
   OtherMale |   1.159944   5748.055     0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -330.41247
Iteration 1:   log likelihood = -294.83445
Iteration 2:   log likelihood = -292.58138
Iteration 3:   log likelihood = -292.42033
Iteration 4:   log likelihood = -292.39014
Iteration 5:   log likelihood = -292.38308
```

```
Iteration 6:   log likelihood = -292.38138
Iteration 7:   log likelihood = -292.38104
Iteration 8:   log likelihood = -292.38098
Iteration 9:   log likelihood = -292.38097

Multinomial logistic regression                 Number of obs   =        325
                                                LR chi2(30)     =      76.06
                                                Prob > chi2     =     0.0000
Log likelihood = -292.38097                     Pseudo R2       =     0.1151

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.019822    .027037     0.74   0.459     .9681838    1.074215
       exper |   .9489836   .0350534    -1.42   0.156     .8827083    1.020235
        male |    .947401   .3778096    -0.14   0.892     .4335979    2.070048
         age |   .9886577   .0320004    -0.35   0.725     .9278861    1.053409
pyperstudw~e |   .9505264    .052458    -0.92   0.358      .853076    1.059109
pyperstudb~k |   .9913608   .0533896    -0.16   0.872     .8920525    1.101725
pyperstudl~o |   .9707222   .0541893    -0.53   0.595     .8701172    1.082959
pyperstude~s |   .9971432   .0155542    -0.18   0.854     .9671188      1.0281
pyperstudlep |   .9581798   .0473983    -0.86   0.388     .8696421    1.055731
pyperstudm~e |   1.028935   .0274409     1.07   0.285     .9765335    1.084149
       Asian |  (omitted)
       Black |   3.725005   3.081334     1.59   0.112     .7362251    18.84703
      Latino |   6.050358   5.892701     1.85   0.065     .8969324    40.81337
       Other |   1.59e-06    .001986    -0.01   0.991            0           .
   AsianMale |  (omitted)
   BlackMale |   .3155138   .4924884    -0.74   0.460     .0148037    6.724604
  LatinoMale |   .3087165   .3747045    -0.97   0.333     .0286032    3.332002
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |    .987604   .0181381    -0.68   0.497     .9526862    1.023802
       exper |   1.038269   .0304594     1.28   0.200     .9802535    1.099718
        male |   3.010259   .9627622     3.45   0.001     1.608298    5.634315
         age |   .9998725   .0283275    -0.00   0.996     .9458649    1.056964
pyperstudw~e |   1.133947   .0582045     2.45   0.014     1.025419    1.253961
pyperstudb~k |   1.125952   .0574173     2.33   0.020     1.018857    1.244304
pyperstudl~o |   1.091657   .0561226     1.71   0.088     .9870187    1.207388
pyperstude~s |   1.041304   .0129945     3.24   0.001     1.016144    1.067087
pyperstudlep |   1.084161   .0387005     2.26   0.024     1.010902    1.162729
pyperstudm~e |   1.033105   .0225848     1.49   0.136     .9897743    1.078332
       Asian |  (omitted)
       Black |   5.683454   4.791849     2.06   0.039     1.088792    29.66742
      Latino |   1.447489   1.875279     0.29   0.775     .1142484     18.3392
       Other |   1.237779   1.830215     0.14   0.885      .068239    22.45192
   AsianMale |  (omitted)
   BlackMale |   1.49e-07    .000114    -0.02   0.984            0           .
  LatinoMale |   1.175295   1.684644     0.11   0.910     .0708029    19.50933
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 4

Iteration 0:   log likelihood = -4176.9289
Iteration 1:   log likelihood = -3917.3519
Iteration 2:   log likelihood = -3906.0806
Iteration 3:   log likelihood = -3906.0498
Iteration 4:   log likelihood = -3906.0498

Multinomial logistic regression                 Number of obs   =       4120
                                                LR chi2(36)     =     541.76
```

```
                                                Prob > chi2     =     0.0000
Log likelihood = -3906.0498                     Pseudo R2       =     0.0649

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9967499   .0061914    -0.52   0.600     .9846886    1.008959
       exper |   1.045606   .0097182     4.80   0.000     1.026731    1.064828
        male |    1.29803   .1244463     2.72   0.007     1.075666    1.566362
         age |   .9470532   .0073963    -6.97   0.000     .9326671    .9616611
pyperstudw~e |   .9811366   .0068464    -2.73   0.006     .9678093    .9946474
pyperstudb~k |     .97631   .0073323    -3.19   0.001     .9620442    .9907873
pyperstudl~o |   .9815797   .0068747    -2.65   0.008     .9681976    .9951468
pyperstude~s |   1.001422   .0027563     0.52   0.606     .9960345    1.006839
pyperstudlep |   .9996658   .0048827    -0.07   0.945     .9901416    1.009282
pyperstudm~e |   .9991592   .0032868    -0.26   0.798     .9927379    1.005622
       Asian |   .7813166   .6446338    -0.30   0.765     .1550722     3.93659
       Black |   .8649417   .1096401    -1.14   0.252     .6746654    1.108882
      Latino |   1.122785   .2191232     0.59   0.553     .7659062    1.645953
       Other |    .733028   .5026319    -0.45   0.651     .1911868    2.810498
   AsianMale |   .6126515    .703686    -0.43   0.670     .0644958    5.819638
   BlackMale |   1.590014   .2951526     2.50   0.012     1.105079     2.28775
  LatinoMale |   1.485974    .460152     1.28   0.201     .8098886    2.726449
   OtherMale |   3.872889   4.780236     1.10   0.273     .3446771    43.51686
-------------+----------------------------------------------------------------
3            |
      tenure |   1.038768   .0071358     5.54   0.000     1.024876    1.052849
       exper |   1.093163   .0125085     7.78   0.000      1.06892    1.117957
        male |   1.355768   .1471562     2.80   0.005     1.095961    1.677164
         age |    .956618   .0092333    -4.59   0.000     .9386911    .9748873
pyperstudw~e |   1.010267   .0094077     1.10   0.273     .9919958    1.028876
pyperstudb~k |   .9935064   .0100817    -0.64   0.521     .9739418    1.013464
pyperstudl~o |   .9858525   .0093235    -1.51   0.132     .9677471    1.004297
pyperstude~s |   1.026302    .003464     7.69   0.000     1.019535    1.033114
pyperstudlep |   1.006718   .0056131     1.20   0.230     .9957761    1.017779
pyperstudm~e |   .9924465    .004519    -1.67   0.096     .9836289    1.001343
       Asian |   .8353587   .7160146    -0.21   0.834     .1556966     4.48195
       Black |   .4267465    .070245    -5.17   0.000     .3090703    .5892272
      Latino |   2.163827   .4237639     3.94   0.000     1.474087    3.176302
       Other |     .85819   .6947223    -0.19   0.850     .1755975    4.194194
   AsianMale |    .261716   .3640736    -0.96   0.335     .0171286    3.998879
   BlackMale |   1.700221   .4009486     2.25   0.024     1.070962    2.699212
  LatinoMale |   .9024606   .3057419    -0.30   0.762     .4645712     1.75309
   OtherMale |    4.33097   6.536739     0.97   0.331     .2248359    83.42663
------------------------------------------------------------------------------


---------> region = 5

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood =  -533.2813
Iteration 1:   log likelihood = -482.45775
Iteration 2:   log likelihood = -480.99412
Iteration 3:   log likelihood = -480.88836
Iteration 4:   log likelihood = -480.86394
Iteration 5:   log likelihood = -480.85904
Iteration 6:   log likelihood = -480.85825
Iteration 7:   log likelihood = -480.85805
Iteration 8:   log likelihood = -480.85801
Iteration 9:   log likelihood = -480.85801

Multinomial logistic regression                 Number of obs   =        549
                                                LR chi2(32)     =     104.85
```

```
                                                Prob > chi2     =     0.0000
Log likelihood = -480.85801                     Pseudo R2       =     0.0983

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.049497    .020363     2.49   0.013     1.010336    1.090177
       exper |   .9852337   .0285791    -0.51   0.608     .9307822    1.042871
        male |   3.201355   .9301463     4.00   0.000      1.81142    5.657812
         age |   .9824908   .0239136    -0.73   0.468     .9367215    1.030497
pyperstudw~e |   .9687161    .039077    -0.79   0.431      .895076    1.048415
pyperstudb~k |   .9658761   .0405825    -0.83   0.409     .8895229    1.048783
pyperstudl~o |   .9940104    .045908    -0.13   0.897     .9079846    1.088187
pyperstude~s |   1.003518   .0091204     0.39   0.699     .9858007    1.021554
pyperstudlep |   .9596376   .0487722    -0.81   0.418     .8686527    1.060152
pyperstudm~e |   .9788396   .0243638    -0.86   0.390     .9322335    1.027776
       Asian |   1.297686   7571.443     0.00   1.000            0           .
       Black |   1.713447   .7139952     1.29   0.196     .7571364    3.877638
      Latino |   2.93e-06   .0060095    -0.01   0.995            0           .
       Other |   5.46e-07   .0011202    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   .7940634   .4559335    -0.40   0.688     .2576999    2.446787
  LatinoMale |   .2030472   466.0869    -0.00   0.999            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |    1.02873   .0166721     1.75   0.081     .9965663    1.061931
       exper |   1.041972   .0278175     1.54   0.124     .9888522    1.097945
        male |    4.06749   1.129188     5.05   0.000     2.360598    7.008596
         age |   .9840489   .0236738    -0.67   0.504      .938726     1.03156
pyperstudw~e |   1.006676   .0387698     0.17   0.863     .9334854    1.085604
pyperstudb~k |   .9751597   .0390599    -0.63   0.530     .9015318    1.054801
pyperstudl~o |   1.011472   .0449737     0.26   0.798     .9270568    1.103574
pyperstude~s |   1.038316   .0088037     4.43   0.000     1.021204    1.055716
pyperstudlep |   .9800021   .0431699    -0.46   0.647     .8989404    1.068373
pyperstudm~e |   1.019621   .0186207     1.06   0.287     .9837704    1.056778
       Asian |   3.33e+07   9.63e+10     0.01   0.995            0           .
       Black |   1.431633   .6341794     0.81   0.418     .6008547    3.411094
      Latino |   4.90e-06   .0089976    -0.01   0.995            0           .
       Other |   8.20e-07   .0015037    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   1.024685   .6000452     0.04   0.967      .325189    3.228831
  LatinoMale |   153301.3   2.81e+08     0.01   0.995            0           .
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------> region = 6

Iteration 0:   log likelihood = -685.67047
Iteration 1:   log likelihood = -638.19197
Iteration 2:   log likelihood = -636.48397
Iteration 3:   log likelihood =  -636.2383
Iteration 4:   log likelihood = -636.19356
Iteration 5:   log likelihood =  -636.1837
Iteration 6:   log likelihood = -636.18141
Iteration 7:   log likelihood = -636.18088
Iteration 8:   log likelihood = -636.18077
Iteration 9:   log likelihood = -636.18075

Multinomial logistic regression                 Number of obs   =        658
                                                LR chi2(36)     =      98.98
                                                Prob > chi2     =     0.0000
Log likelihood = -636.18075                     Pseudo R2       =     0.0722
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9769461   .0154599    -1.47   0.141     .9471103    1.007722
       exper |   1.013005   .0247446     0.53   0.597     .9656496    1.062684
        male |   1.710881   .3885054     2.36   0.018     1.096301    2.669992
         age |   .9802444   .0198847    -0.98   0.325     .9420357    1.020003
pyperstudw~e |   1.007569   .0540368     0.14   0.888     .9070348    1.119246
pyperstudb~k |   1.005605   .0543792     0.10   0.918     .9044779     1.11804
pyperstudl~o |   .9973763    .053362    -0.05   0.961     .8980855    1.107644
pyperstude~s |   .9888677   .0074065    -1.49   0.135     .9744573    1.003491
pyperstudlep |   1.067175   .0277726     2.50   0.012     1.014107     1.12302
pyperstudm~e |   .9943764   .0130406    -0.43   0.667     .9691431    1.020267
       Asian |   4.88e-07   .0013212    -0.01   0.996            0           .
       Black |   .9426513   .6578197    -0.08   0.933     .2400759    3.701293
      Latino |   .4349174   .5068658    -0.71   0.475     .0442987    4.269948
       Other |   4.54e-07   .0012301    -0.01   0.996            0           .
   AsianMale |   5.34e+13   2.51e+17     0.01   0.995            0           .
   BlackMale |    4.40635   3.866661     1.69   0.091     .7891011    24.60512
  LatinoMale |   5.416412   7.706103     1.19   0.235     .3331809    88.05284
   OtherMale |    1.50226   4660.708     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9869457   .0137325    -0.94   0.345     .9603942    1.014231
       exper |   1.095904   .0273003     3.68   0.000     1.043682    1.150739
        male |   2.370904   .4951877     4.13   0.000      1.57446    3.570229
         age |   .9435597   .0205367    -2.67   0.008     .9041549    .9846818
pyperstudw~e |   1.049028   .0565085     0.89   0.374     .9439198    1.165841
pyperstudb~k |   1.051301   .0566457     0.93   0.353      .945939    1.168399
pyperstudl~o |    1.03414   .0554702     0.63   0.531     .9309406    1.148781
pyperstude~s |   1.015123   .0064333     2.37   0.018     1.002592    1.027811
pyperstudlep |   1.040146    .025581     1.60   0.109     .9911974    1.091512
pyperstudm~e |   1.014048   .0111721     1.27   0.205     .9923854    1.036183
       Asian |   4.73e-07   .0011316    -0.01   0.995            0           .
       Black |   .7889455   .5012735    -0.37   0.709     .2271004    2.740793
      Latino |   6.04e-07   .0005477    -0.02   0.987            0           .
       Other |   5.26e-07   .0012591    -0.01   0.995            0           .
   AsianMale |    1027022   6.96e+09     0.00   0.998            0           .
   BlackMale |   .8079445   .7460844    -0.23   0.817     .1322367    4.936407
  LatinoMale |    2298205   2.08e+09     0.02   0.987            0           .
   OtherMale |    3910456   9.36e+09     0.01   0.995            0           .
------------------------------------------------------------------------------


---------> region = 7

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1002.4043
Iteration 1:   log likelihood = -914.85988
Iteration 2:   log likelihood = -911.03035
Iteration 3:   log likelihood = -910.93823
Iteration 4:   log likelihood = -910.92028
Iteration 5:   log likelihood = -910.91609
Iteration 6:   log likelihood = -910.91512
Iteration 7:   log likelihood = -910.91492
Iteration 8:   log likelihood = -910.91488

Multinomial logistic regression                 Number of obs   =       1045
                                                LR chi2(34)     =     182.98
                                                Prob > chi2     =     0.0000
Log likelihood = -910.91488                     Pseudo R2       =     0.0913

------------------------------------------------------------------------------
```

```
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.002918   .0151601     0.19   0.847     .9736408    1.033076
       exper |   .9951092   .0198314    -0.25   0.806     .9569898    1.034747
        male |   2.849179    .672573     4.44   0.000     1.793851     4.52536
         age |   .9774504   .0174869    -1.27   0.202     .9437706    1.012332
pyperstudw~e |   .9766055   .1581978    -0.15   0.884     .7109437    1.341538
pyperstudb~k |   .9879948   .1610578    -0.07   0.941      .717788    1.359919
pyperstudl~o |   .9837691   .1608837    -0.10   0.920     .7139854    1.355492
pyperstude~s |   .9779648    .008761    -2.49   0.013     .9609434    .9952876
pyperstudlep |   1.027898   .0299044     0.95   0.344     .9709265    1.088213
pyperstudm~e |   .9573908   .0198188    -2.10   0.035     .9193241    .9970338
       Asian |   1.48e+08   6.10e+11     0.00   0.996            0           .
       Black |   1.760283   .6982807     1.43   0.154     .8089507    3.830388
      Latino |   2.786347   2.665725     1.07   0.284     .4272503    18.17138
       Other |   4.44e-06    .003801    -0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |   1.584601   .8415091     0.87   0.386     .5596104     4.48698
  LatinoMale |   1.456973   2.522084     0.22   0.828     .0489762    43.34294
   OtherMale |     905913   7.76e+08     0.02   0.987            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9909149   .0105799    -0.85   0.393      .970394     1.01187
       exper |   1.058345   .0167164     3.59   0.000     1.026083    1.091621
        male |   2.315094   .3924988     4.95   0.000     1.660568    3.227606
         age |   .9790523   .0144039    -1.44   0.150     .9512243    1.007694
pyperstudw~e |   .9778955    .118526    -0.18   0.854     .7711208    1.240116
pyperstudb~k |   .9508966   .1161547    -0.41   0.680     .7484394     1.20812
pyperstudl~o |    .955831   .1170452    -0.37   0.712     .7518794    1.215106
pyperstude~s |    1.04188   .0064989     6.58   0.000      1.02922    1.054696
pyperstudlep |   1.002011   .0227611     0.09   0.930     .9583789     1.04763
pyperstudm~e |   .9997963   .0098329    -0.02   0.983     .9807088    1.019255
       Asian |   3.062879   21460.03     0.00   1.000            0           .
       Black |   .6645246    .23435    -1.16   0.247     .3329108     1.32646
      Latino |   .3751504    .43277    -0.85   0.395     .0391082    3.598682
       Other |   5.15e-06   .0030378    -0.02   0.984            0           .
   AsianMale |  (omitted)
   BlackMale |   2.722419   1.326068     2.06   0.040     1.047953    7.072423
  LatinoMale |   2.113593   3.901328     0.41   0.685     .0567349    78.73946
   OtherMale |    1293449   7.64e+08     0.02   0.981            0           .
------------------------------------------------------------------------------


--------->  region = 8

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -311.1946
Iteration 1:   log likelihood = -277.16961
Iteration 2:   log likelihood = -275.09098
Iteration 3:   log likelihood = -274.90562
Iteration 4:   log likelihood =  -274.8636
Iteration 5:   log likelihood = -274.85541
Iteration 6:   log likelihood = -274.85367
Iteration 7:   log likelihood = -274.85326
Iteration 8:   log likelihood = -274.85316
Iteration 9:   log likelihood = -274.85314

Multinomial logistic regression                 Number of obs   =        319
                                                LR chi2(34)     =      72.68
                                                Prob > chi2     =     0.0001
Log likelihood = -274.85314                     Pseudo R2       =     0.1168

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
```

```
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9930851   .0252217    -0.27   0.785     .9448618     1.04377
       exper |   1.086138   .0497845     1.80   0.071     .9928171    1.188231
        male |   2.515165   1.045772     2.22   0.027     1.113393    5.681784
         age |   .9355633    .039245    -1.59   0.112     .8617217    1.015733
pyperstudw~e |   .8072262   .0902804    -1.91   0.056     .6483308    1.005064
pyperstudb~k |   .8371085   .0925979    -1.61   0.108     .6739457    1.039773
pyperstudl~o |   .8798913   .1015516    -1.11   0.268     .7017599    1.103239
pyperstude~s |    .960157   .0156775    -2.49   0.013     .9299162    .9913813
pyperstudlep |   .8835022   .0864887    -1.27   0.206     .7292577    1.070371
pyperstudm~e |   .9612512   .0340796    -1.11   0.265     .8967243    1.030421
       Asian |   3.36e-07   .0013579    -0.00   0.997            0           .
       Black |   3.687916   3.076765     1.56   0.118     .7188501    18.92011
      Latino |   1.37e-06   .0036935    -0.01   0.996            0           .
       Other |   8.40e-07   .0012991    -0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |   .9579048   1.107769    -0.04   0.970     .0993003     9.24047
  LatinoMale |    8968664   6.57e+10     0.00   0.998            0           .
   OtherMale |   783838.1   5.48e+09     0.00   0.998            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9934182   .0190904    -0.34   0.731     .9566976    1.031548
       exper |    1.06248   .0299774     2.15   0.032      1.00532    1.122889
        male |   3.056625   .9223699     3.70   0.000     1.691932    5.522065
         age |   .9698344   .0242452    -1.23   0.220     .9234602    1.018537
pyperstudw~e |   .9570043   .1010253    -0.42   0.677     .7781396    1.176983
pyperstudb~k |   .9328783   .0986961    -0.66   0.511     .7581761    1.147836
pyperstudl~o |   1.002048   .1113106     0.02   0.985     .8059991    1.245784
pyperstude~s |   1.029007   .0108131     2.72   0.007      1.00803     1.05042
pyperstudlep |   .9415796   .0525157    -1.08   0.280     .8440771    1.050345
pyperstudm~e |   1.016703   .0142754     1.18   0.238     .9891057    1.045071
       Asian |   2.30e-07   .0006148    -0.01   0.995            0           .
       Black |   2.807485   1.926452     1.50   0.132     .7315367    10.77454
      Latino |   4.62e-07   .0008352    -0.01   0.994            0           .
       Other |   1.025509   1.249067     0.02   0.984     .0942276    11.16094
   AsianMale |  (omitted)
   BlackMale |   .8701024   .8775458    -0.14   0.890     .1205278    6.281359
  LatinoMale |   1.16e+14   4.19e+17     0.01   0.993            0           .
   OtherMale |   1.35e+07   4.20e+10     0.01   0.996            0           .
------------------------------------------------------------------------------


---------->  region = 9

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -214.48902
Iteration 1:   log likelihood = -191.07223
Iteration 2:   log likelihood = -189.32473
Iteration 3:   log likelihood = -189.12684
Iteration 4:   log likelihood = -189.08202
Iteration 5:   log likelihood = -189.07321
Iteration 6:   log likelihood = -189.07166
Iteration 7:   log likelihood = -189.07131
Iteration 8:   log likelihood = -189.07122
Iteration 9:   log likelihood = -189.07121

Multinomial logistic regression                 Number of obs   =        219
                                                LR chi2(30)     =      50.84
                                                Prob > chi2     =     0.0101
Log likelihood = -189.07121                     Pseudo R2       =     0.1185

------------------------------------------------------------------------------
```

```
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.072287   .0482337     1.55   0.121     .9817979    1.171115
       exper |   .9280686    .057253    -1.21   0.226     .8223734    1.047348
        male |   2.347062   1.218964     1.64   0.100     .8480992    6.495346
         age |   .9778539    .040655    -0.54   0.590     .9013316    1.060873
pyperstudw~e |   .8304926   .1122358    -1.37   0.169     .6372374    1.082356
pyperstudb~k |   .8508792   .1218193    -1.13   0.259     .6426913    1.126506
pyperstudl~o |   .8129578   .1123986    -1.50   0.134      .619986    1.065992
pyperstude~s |   1.005996   .0192914     0.31   0.755     .9688871    1.044526
pyperstudlep |   .9750025   .1590465    -0.16   0.877      .708197    1.342324
pyperstudm~e |   .9559936   .0469306    -0.92   0.359     .8682979    1.052546
       Asian |  (omitted)
       Black |    16.7206   23.12842     2.04   0.042     1.111337    251.5697
      Latino |    13.9352   43438.26     0.00   0.999            0           .
       Other |   1.72e-07   .0004419    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   2.56e-08   .0000362    -0.01   0.990            0           .
  LatinoMale |   8.37e-08   .0002827    -0.00   0.996            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9980618   .0230603    -0.08   0.933     .9538725    1.044298
       exper |   1.031512   .0368658     0.87   0.385     .9617293    1.106359
        male |   3.117158   1.066702     3.32   0.001      1.59395    6.095971
         age |   1.004849   .0296688     0.16   0.870     .9483495    1.064714
pyperstudw~e |   1.097352   .1346235     0.76   0.449     .8628205    1.395635
pyperstudb~k |   1.113042   .1480931     0.80   0.421     .8575453    1.444661
pyperstudl~o |   1.073597   .1317323     0.58   0.563     .8441063     1.36548
pyperstude~s |   1.035093    .013226     2.70   0.007     1.009492    1.061343
pyperstudlep |   1.051852   .0950831     0.56   0.576     .8810681     1.25574
pyperstudm~e |   .9767245   .0225304    -1.02   0.307     .9335491    1.021897
       Asian |  (omitted)
       Black |    4.24998   5.291561     1.16   0.245     .3703169    48.77532
      Latino |    1374322   1.96e+09     0.01   0.992            0           .
       Other |   1.26e-06    .001783    -0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |   1.15e-07   .0000937    -0.02   0.984            0           .
  LatinoMale |   4.64e-07   .0006615    -0.01   0.992            0           .
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 10

Iteration 0:   log likelihood = -2758.2734
Iteration 1:   log likelihood = -2571.8378
Iteration 2:   log likelihood = -2567.7383
Iteration 3:   log likelihood = -2567.7093
Iteration 4:   log likelihood = -2567.7093

Multinomial logistic regression                 Number of obs   =       2659
                                                LR chi2(36)     =     381.13
                                                Prob > chi2     =     0.0000
Log likelihood = -2567.7093                     Pseudo R2       =     0.0691

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.00939   .0078779     1.20   0.231     .9940671    1.024949
       exper |    1.03011   .0118728     2.57   0.010       1.0071    1.053645
```

```
        male |   1.768534   .2146266     4.70   0.000     1.394161    2.243437
         age |   .9591049   .0093993    -4.26   0.000     .9408584    .9777053
pyperstudw~e |    .994958   .0128224    -0.39   0.695     .9701413     1.02041
pyperstudb~k |    .997862   .0130043    -0.16   0.870     .9726968    1.023678
pyperstudl~o |   .9983924   .0130127    -0.12   0.902     .9732109    1.024225
pyperstude~s |   .9928941    .003901    -1.82   0.070     .9852776    1.000569
pyperstudlep |   1.002472   .0073593     0.34   0.737     .9881513       1.017
pyperstudm~e |   .9926472   .0059299    -1.24   0.217     .9810926    1.004338
       Asian |   .5411159   .5853555    -0.57   0.570     .0649378    4.509028
       Black |   2.065103   .3816079     3.92   0.000     1.437637    2.966431
      Latino |   3.695645   .9820494     4.92   0.000     2.195326    6.221302
       Other |   .6180363   .4773536    -0.62   0.533     .1360098    2.808392
   AsianMale |   2.914423   3.605687     0.86   0.387     .2579034    32.93428
   BlackMale |   1.258428   .3348541     0.86   0.388     .7470209    2.119942
  LatinoMale |   .5945453    .226825    -1.36   0.173     .2814771    1.255819
   OtherMale |   .2927495    .381338    -0.94   0.346     .0227884    3.760785
-------------+----------------------------------------------------------------
3            |
      tenure |   1.021479   .0074679     2.91   0.004     1.006947    1.036222
       exper |   1.095762   .0135151     7.41   0.000     1.069591    1.122574
        male |   1.507014   .1769355     3.49   0.000     1.197235    1.896947
         age |   .9505108   .0100941    -4.78   0.000     .9309312    .9705022
pyperstudw~e |   1.040191   .0140377     2.92   0.004     1.013039    1.068072
pyperstudb~k |    1.01261   .0141393     0.90   0.369     .9852728    1.040705
pyperstudl~o |    1.00264   .0141144     0.19   0.851     .9753545    1.030689
pyperstude~s |   1.025293   .0040066     6.39   0.000      1.01747    1.033176
pyperstudlep |    1.00724   .0077296     0.94   0.347     .9922035    1.022504
pyperstudm~e |   .9917855   .0062654    -1.31   0.192     .9795813    1.004142
       Asian |   .5560537    .401728    -0.81   0.417     .1349446    2.291279
       Black |    1.13758   .2345399     0.63   0.532     .7594265    1.704032
      Latino |   2.931838   .8328629     3.79   0.000     1.680098    5.116175
       Other |   .1682925    .179549    -1.67   0.095     .0207936    1.362074
   AsianMale |   5.534601   4.914622     1.93   0.054     .9710355     31.5455
   BlackMale |   1.645842   .4980258     1.65   0.100     .9095315    2.978233
  LatinoMale |   .9134465   .3761001    -0.22   0.826     .4075788    2.047173
   OtherMale |   7.502227   9.121192     1.66   0.097     .6923109    81.29788
------------------------------------------------------------------------------


---------->  region = 11

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1987.0581
Iteration 1:   log likelihood = -1824.8319
Iteration 2:   log likelihood = -1822.1889
Iteration 3:   log likelihood = -1821.9681
Iteration 4:   log likelihood = -1821.9192
Iteration 5:   log likelihood = -1821.9089
Iteration 6:   log likelihood = -1821.9071
Iteration 7:   log likelihood = -1821.9069
Iteration 8:   log likelihood = -1821.9069
Iteration 9:   log likelihood = -1821.9069

Multinomial logistic regression                 Number of obs   =       1850
                                                LR chi2(34)     =     330.30
                                                Prob > chi2     =     0.0000
Log likelihood = -1821.9069                     Pseudo R2       =     0.0831

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9753914   .0095764    -2.54   0.011     .9568014    .9943426
       exper |   .9528169   .0097327    -4.73   0.000     .9339309    .9720848
        male |   1.128761   .1476015     0.93   0.354     .8735654    1.458508
```

```
         age |   1.006101   .0088089     0.69   0.487     .9889834    1.023515
pyperstudw~e |   .9429411   .0176265    -3.14   0.002     .9090191     .978129
pyperstudb~k |   .9320947   .0181481    -3.61   0.000     .8971953    .9683517
pyperstudl~o |    .926932   .0171695    -4.10   0.000     .8938839     .961202
pyperstude~s |   .9982685    .004193    -0.41   0.680     .9900842     1.00652
pyperstudlep |   1.003204   .0132306     0.24   0.808     .9776048    1.029474
pyperstudm~e |   .9938326   .0051806    -1.19   0.235     .9837306    1.004038
       Asian |   .2503123   .2843002    -1.22   0.223     .0270211    2.318791
       Black |    2.96924   .8890921     3.63   0.000     1.651074     5.33979
      Latino |   3.121323   1.132299     3.14   0.002     1.533045    6.355103
       Other |   .1533719   .1659298    -1.73   0.083     .0184013    1.278329
   AsianMale |  (omitted)
   BlackMale |   1.132004   .4691677     0.30   0.765     .5024135    2.550556
  LatinoMale |   .6060017   .3261002    -0.93   0.352     .2110704    1.739884
   OtherMale |   3.62e-06   .0045465    -0.01   0.992            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9880901   .0089772    -1.32   0.187     .9706509    1.005843
       exper |   .9729155   .0099042    -2.70   0.007      .953696    .9925222
        male |     1.7117   .2223016     4.14   0.000     1.327029    2.207876
         age |   1.058741   .0097394     6.21   0.000     1.039823    1.078003
pyperstudw~e |   1.020078   .0208197     0.97   0.330     .9800779    1.061711
pyperstudb~k |   .9878955   .0210393    -0.57   0.567     .9475079    1.030005
pyperstudl~o |   .9752944   .0198786    -1.23   0.220     .9371011    1.015044
pyperstude~s |   1.032864   .0044697     7.47   0.000     1.024141    1.041662
pyperstudlep |   1.018745   .0139242     1.36   0.174     .9918165    1.046405
pyperstudm~e |   .9831693   .0067611    -2.47   0.014     .9700066    .9965106
       Asian |   .5551733   .6224433    -0.52   0.600     .0616719    4.997694
       Black |   3.626295   1.163675     4.01   0.000     1.933362     6.80163
      Latino |   1.928299   .7949731     1.59   0.111     .8595134    4.326097
       Other |   4.17e-07   .0003399    -0.02   0.986            0           .
   AsianMale |  (omitted)
   BlackMale |   .3119982   .1549119    -2.35   0.019      .117901    .8256324
  LatinoMale |    .963012   .5533627    -0.07   0.948     .3122605    2.969931
   OtherMale |   666313.7   5.43e+08     0.02   0.987            0           .
------------------------------------------------------------------------------


---------->  region = 12

Iteration 0:   log likelihood =  -763.3785
Iteration 1:   log likelihood = -693.73895
Iteration 2:   log likelihood = -690.25553
Iteration 3:   log likelihood = -689.95535
Iteration 4:   log likelihood = -689.90916
Iteration 5:   log likelihood = -689.90623
Iteration 6:   log likelihood = -689.90559
Iteration 7:   log likelihood = -689.90544
Iteration 8:   log likelihood = -689.90541

Multinomial logistic regression                 Number of obs   =        740
                                                LR chi2(36)     =     146.95
                                                Prob > chi2     =     0.0000
Log likelihood = -689.90541                     Pseudo R2       =     0.0962

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9955904   .0167873    -0.26   0.793     .9632256    1.029043
       exper |   1.004688   .0233406     0.20   0.840     .9599667    1.051492
        male |   1.143506   .2776885     0.55   0.581     .7104494    1.840534
         age |    .943782   .0189493    -2.88   0.004     .9073633    .9816624
pyperstudw~e |   .7534871    .043999    -4.85   0.000     .6720026    .8448521
pyperstudb~k |   .7527914   .0482645    -4.43   0.000     .6638969    .8535887
```

```
pyperstudl~o |   .7722882   .0464266    -4.30   0.000       .68645    .8688602
pyperstude~s |   .9990331   .0085636    -0.11   0.910      .982389    1.015959
pyperstudlep |   .9940849   .0277562    -0.21   0.832     .9411455    1.050002
pyperstudm~e |   .9962063   .0083835    -0.45   0.652     .9799096    1.012774
       Asian |   .0000128   .0137248    -0.01   0.992            0           .
       Black |   1.912894    .858083     1.45   0.148     .7940727    4.608096
      Latino |   13.42091   14.93914     2.33   0.020     1.514568    118.9256
       Other |   2.216242   2.841506     0.62   0.535     .1795841    27.35059
   AsianMale |   1.57e+11   1.86e+14     0.02   0.983            0           .
   BlackMale |   1.932936    1.29392     0.98   0.325     .5204966    7.178228
  LatinoMale |   .1267417   .1799577    -1.45   0.146       .00784    2.048904
   OtherMale |   9.06e-07   .0009724    -0.01   0.990            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.017681   .0130193     1.37   0.171     .9924806    1.043521
       exper |   1.032922   .0187645     1.78   0.075     .9967915    1.070363
        male |   2.278311    .445317     4.21   0.000     1.553237     3.34186
         age |   .9749143   .0155724    -1.59   0.112     .9448658    1.005918
pyperstudw~e |   .9102605   .0518982    -1.65   0.099     .8140194     1.01788
pyperstudb~k |    .888032   .0536486    -1.97   0.049     .7888692    .9996598
pyperstudl~o |   .8933431   .0523447    -1.92   0.054     .7964212     1.00206
pyperstude~s |   1.027143   .0070704     3.89   0.000     1.013379    1.041095
pyperstudlep |    1.00883   .0245679     0.36   0.718     .9618086     1.05815
pyperstudm~e |   .9908785   .0083714    -1.08   0.278      .974606    1.007423
       Asian |   5.95e-06   .0049449    -0.01   0.988            0           .
       Black |   2.180131   .9117317     1.86   0.062     .9605274    4.948293
      Latino |   6.197845   7.768439     1.46   0.146     .5312958    72.30112
       Other |   2.144257   2.697887     0.61   0.544     .1820966    25.24945
   AsianMale |   4.51e+10   4.37e+13     0.03   0.980            0           .
   BlackMale |   .6260038    .397892    -0.74   0.461     .1801142    2.175735
  LatinoMale |    .182224    .273858    -1.13   0.257       .00958     3.46614
   OtherMale |   1.35e-06   .0011202    -0.02   0.987            0           .
------------------------------------------------------------------------------


--------->  region = 13

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -1149.566
Iteration 1:   log likelihood = -1083.2937
Iteration 2:   log likelihood = -1081.1058
Iteration 3:   log likelihood = -1080.8808
Iteration 4:   log likelihood =  -1080.836
Iteration 5:   log likelihood = -1080.8264
Iteration 6:   log likelihood = -1080.8243
Iteration 7:   log likelihood = -1080.8238
Iteration 8:   log likelihood = -1080.8237
Iteration 9:   log likelihood = -1080.8237

Multinomial logistic regression                 Number of obs   =       1070
                                                LR chi2(32)     =     137.48
                                                Prob > chi2     =     0.0000
Log likelihood = -1080.8237                     Pseudo R2       =     0.0598

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.032077   .0125496     2.60   0.009     1.007771    1.056969
       exper |    .993256   .0166635    -0.40   0.687     .9611273    1.026459
        male |   1.210204   .2184239     1.06   0.290     .8496289    1.723804
         age |   .9755579     .01434    -1.68   0.092     .9478531    1.004072
pyperstudw~e |   .9892583   .0340442    -0.31   0.754     .9247334    1.058285
pyperstudb~k |   1.013835   .0365099     0.38   0.703     .9447442    1.087979
```

```
pyperstudl~o |   1.009025   .0336437     0.27   0.788     .9451932    1.077168
pyperstude~s |   .9909533   .0066148    -1.36   0.173     .9780731    1.004003
pyperstudlep |   .9930139   .0152366    -0.46   0.648     .9635952    1.023331
pyperstudm~e |   .9854191   .0075464    -1.92   0.055     .9707388    1.000321
       Asian |  (omitted)
       Black |   1.607124   .5803617     1.31   0.189     .7918901    3.261623
      Latino |    1.04364   .3252821     0.14   0.891     .5665625    1.922443
       Other |   6.29e-07   .0004911    -0.02   0.985            0           .
   AsianMale |  (omitted)
   BlackMale |   5.018131   4.345145     1.86   0.062     .9193817    27.38976
  LatinoMale |   2.243817   1.056578     1.72   0.086     .8915999    5.646832
   OtherMale |   646502.9   5.04e+08     0.02   0.986            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.014082   .0115092     1.23   0.218     .9917739    1.036893
       exper |   1.079307   .0189412     4.35   0.000     1.042814    1.117077
        male |   1.351395   .2316249     1.76   0.079     .9658044    1.890931
         age |   .9612018   .0153096    -2.48   0.013      .931659    .9916815
pyperstudw~e |   .9931704   .0329062    -0.21   0.836     .9307249    1.059806
pyperstudb~k |   .9800416    .034476    -0.57   0.567     .9147468    1.049997
pyperstudl~o |   .9799285   .0316856    -0.63   0.531     .9197528    1.044041
pyperstude~s |   1.021813    .006906     3.19   0.001     1.008367    1.035439
pyperstudlep |   .9901596    .016157    -0.61   0.544     .9589934    1.022339
pyperstudm~e |   .9856173   .0077585    -1.84   0.066     .9705277    1.000942
       Asian |  (omitted)
       Black |   1.197288   .4901564     0.44   0.660     .5366935    2.670983
      Latino |   1.054368   .3329873     0.17   0.867     .5677649    1.958016
       Other |   7.91e-07   .0006639    -0.02   0.987            0           .
   AsianMale |  (omitted)
   BlackMale |   8.929475   7.834641     2.50   0.013     1.599519    49.84969
  LatinoMale |   1.249987   .6356363     0.44   0.661     .4613781     3.38652
   OtherMale |   2.110636   2178.939     0.00   0.999            0           .
------------------------------------------------------------------------------


---------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -268.3608
Iteration 1:   log likelihood = -238.01883
Iteration 2:   log likelihood = -234.99729
Iteration 3:   log likelihood = -233.75169
Iteration 4:   log likelihood =  -233.5936
Iteration 5:   log likelihood = -233.56051
Iteration 6:   log likelihood = -233.55552
Iteration 7:   log likelihood = -233.55492
Iteration 8:   log likelihood =  -233.5548
Iteration 9:   log likelihood = -233.55478
Iteration 10:  log likelihood = -233.55477

Multinomial logistic regression                 Number of obs   =        284
                                                LR chi2(32)     =      69.61
                                                Prob > chi2     =     0.0001
Log likelihood = -233.55477                     Pseudo R2       =     0.1297

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9981351   .0304542    -0.06   0.951     .9401957    1.059645
       exper |   1.044098   .0558675     0.81   0.420     .9401459    1.159544
        male |   1.639162   .7394024     1.10   0.273     .6771065    3.968137
         age |   .9379445   .0478136    -1.26   0.209      .848761    1.036499
pyperstudw~e |   1.199576   .2582996     0.85   0.398     .7865786     1.82942
```

```
pyperstudb~k |   1.310253   .3142129     1.13   0.260     .8188945    2.096441
pyperstudl~o |   1.182022   .2468272     0.80   0.423     .7850182    1.779802
pyperstude~s |   .9989124    .018063    -0.06   0.952     .9641295     1.03495
pyperstudlep |   .8916741   .1209083    -0.85   0.398     .6835744    1.163125
pyperstudm~e |   .9808223   .0376396    -0.50   0.614     .9097561     1.05744
       Asian |  (omitted)
       Black |   2.84e-07   .0007756    -0.01   0.996            0           .
      Latino |   6.77e-07   .0020841    -0.00   0.996            0           .
       Other |   9.80e-07   .0032341    -0.00   0.997            0           .
   AsianMale |  (omitted)
   BlackMale |    2091898   1.25e+10     0.00   0.998            0           .
  LatinoMale |   5.14e+14   3.07e+18     0.01   0.995            0           .
   OtherMale |   .7270303   3393.906    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9784627   .0183531    -1.16   0.246     .9431445    1.015103
       exper |   1.045938   .0324749     1.45   0.148     .9841865    1.111564
        male |   2.752858   .8392826     3.32   0.001      1.51451    5.003748
         age |   .9868519   .0291433    -0.45   0.654     .9313537    1.045657
pyperstudw~e |   1.691539   .3127718     2.84   0.004     1.177312    2.430369
pyperstudb~k |   1.653335   .3357125     2.48   0.013     1.110511    2.461494
pyperstudl~o |   1.650236   .3001225     2.75   0.006     1.155423    2.356953
pyperstude~s |   1.013091   .0115261     1.14   0.253       .99075    1.035935
pyperstudlep |    1.07252   .0426566     1.76   0.078     .9920906    1.159471
pyperstudm~e |   1.003198   .0217632     0.15   0.883     .9614371    1.046773
       Asian |  (omitted)
       Black |   2.610441   3.345691     0.75   0.454     .2117215    32.18569
      Latino |   2.43e-07   .0004217    -0.01   0.993            0           .
       Other |   1.295155   1.947734     0.17   0.863     .0679569    24.68372
   AsianMale |  (omitted)
   BlackMale |    6309998   1.44e+10     0.01   0.995            0           .
  LatinoMale |   3.84e+14   2.08e+18     0.01   0.995            0           .
   OtherMale |   1.421892   3.073102     0.16   0.871     .0205676    98.29905
------------------------------------------------------------------------------


---------->  region = 15

note: Black omitted because of collinearity
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -291.15973
Iteration 1:   log likelihood = -250.43163
Iteration 2:   log likelihood = -248.35463
Iteration 3:   log likelihood = -248.29836
Iteration 4:   log likelihood = -248.28637
Iteration 5:   log likelihood = -248.28347
Iteration 6:   log likelihood = -248.28286
Iteration 7:   log likelihood = -248.28273
Iteration 8:   log likelihood =  -248.2827
Iteration 9:   log likelihood =  -248.2827

Multinomial logistic regression                 Number of obs   =        298
                                                LR chi2(28)     =      85.75
                                                Prob > chi2     =     0.0000
Log likelihood =  -248.2827                     Pseudo R2       =     0.1473

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.03319   .0327643     1.03   0.303     .9709278    1.099444
       exper |   1.085425    .062558     1.42   0.155     .9694849    1.215229
        male |   1.212472   .5693944     0.41   0.682     .4829866    3.043745
```

```
         age |   .8985206   .0459025    -2.09   0.036     .8129108    .9931461
pyperstudw~e |   .9457389   .2605669    -0.20   0.840     .5511261    1.622899
pyperstudb~k |   .9843325   .3036118    -0.05   0.959     .5377662    1.801732
pyperstudl~o |   .9858757   .2741623    -0.05   0.959     .5716253    1.700329
pyperstude~s |     .96732   .0166812    -1.93   0.054     .9351719    1.000573
pyperstudlep |     .99085   .0290602    -0.31   0.754     .9354992    1.049476
pyperstudm~e |   1.061931   .0347238     1.84   0.066     .9960089    1.132217
       Asian |   5.12e-07   .0010701    -0.01   0.994            0           .
       Black |  (omitted)
      Latino |   .5233574   .4462176    -0.76   0.448     .0984145    2.783158
       Other |   5.530374   16132.67     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |    1.67294    1.56546     0.55   0.582      .267279    10.47118
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.013535   .0204712     0.67   0.506     .9741956    1.054462
       exper |   1.057723   .0349729     1.70   0.090     .9913515    1.128539
        male |   4.577752   1.537913     4.53   0.000      2.36967    8.843346
         age |   .9606676   .0286435    -1.35   0.178     .9061362    1.018481
pyperstudw~e |   .8709734   .1704369    -0.71   0.480     .5935223    1.278123
pyperstudb~k |   .8547981    .180684    -0.74   0.458     .5648587    1.293562
pyperstudl~o |   .8395249    .165184    -0.89   0.374     .5708895    1.234568
pyperstude~s |   1.041816   .0112727     3.79   0.000     1.019955    1.064146
pyperstudlep |   1.003191   .0239697     0.13   0.894     .9572947    1.051289
pyperstudm~e |   .9716842   .0196958    -1.42   0.156     .9338379    1.011064
       Asian |   5.42e-06   .0066302    -0.01   0.992            0           .
       Black |  (omitted)
      Latino |   1.185828   .8725307     0.23   0.817     .2803555    5.015735
       Other |   889228.8   1.17e+09     0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |    .877493   .6982641    -0.16   0.870     .1844595    4.174326
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 16

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -431.37699
Iteration 1:   log likelihood = -401.19283
Iteration 2:   log likelihood = -398.46452
Iteration 3:   log likelihood = -397.53199
Iteration 4:   log likelihood = -397.38419
Iteration 5:   log likelihood = -397.36069
Iteration 6:   log likelihood =   -397.355
Iteration 7:   log likelihood = -397.35383
Iteration 8:   log likelihood = -397.35358
Iteration 9:   log likelihood = -397.35352
Iteration 10:  log likelihood = -397.35351

Multinomial logistic regression                 Number of obs   =        414
                                                LR chi2(34)     =      68.05
                                                Prob > chi2     =     0.0005
Log likelihood = -397.35351                     Pseudo R2       =     0.0789

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.04725   .0243806     1.98   0.047     1.000539    1.096143
       exper |   .9795089   .0300095    -0.68   0.499     .9224225    1.040128
        male |    1.10881   .3484167     0.33   0.742     .5989458    2.052705
```

```
         age |   .9723561   .0274762    -0.99   0.321     .9199678    1.027728
pyperstudw~e |   .9684863   .0314275    -0.99   0.324     .9088075    1.032084
pyperstudb~k |   .9937667   .0419061    -0.15   0.882     .9149348    1.079391
pyperstudl~o |   .9816257   .0306005    -0.59   0.552     .9234452    1.043472
pyperstude~s |   .9805164   .0107398    -1.80   0.072     .9596911    1.001794
pyperstudlep |   .9971642   .0280362    -0.10   0.920     .9437009    1.053656
pyperstudm~e |   1.005573   .0134908     0.41   0.679     .9794761    1.032365
       Asian |   9.53e-08   .0003462    -0.00   0.996            0           .
       Black |   .6268645   .6130313    -0.48   0.633     .0922053    4.261785
      Latino |   1.027771   .9533345     0.03   0.976     .1668566    6.330667
       Other |   2.67e-07   .0006555    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   5.654132    9.00619     1.09   0.277     .2491889    128.2931
  LatinoMale |   4.155603   5.411722     1.09   0.274      .323697    53.34938
   OtherMale |   1.14e+07   2.79e+10     0.01   0.995            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.033348   .0166187     2.04   0.041     1.001284    1.066439
       exper |      1.023   .0229159     1.02   0.310     .9790572    1.068915
        male |   1.525757    .375621     1.72   0.086     .9417397    2.471951
         age |   .9867211    .022165    -0.60   0.552      .944221    1.031134
pyperstudw~e |   1.036617   .0344425     1.08   0.279     .9712624     1.10637
pyperstudb~k |   1.040922   .0427482     0.98   0.329     .9604201    1.128171
pyperstudl~o |   1.016133   .0328808     0.49   0.621     .9536891    1.082666
pyperstude~s |   1.009399    .007923     1.19   0.233     .9939892    1.025048
pyperstudlep |    1.04622   .0216009     2.19   0.029     1.004729    1.089426
pyperstudm~e |   1.002098   .0136243     0.15   0.877     .9757475     1.02916
       Asian |   3.23e-07   .0008041    -0.01   0.995            0           .
       Black |   3.33e-07   .0002799    -0.02   0.986            0           .
      Latino |    .287492   .2764755    -1.30   0.195     .0436558    1.893259
       Other |   2.67e-07   .0004702    -0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |   .4703347   1085.525    -0.00   1.000            0           .
  LatinoMale |   6.21e-07   .0009017    -0.01   0.992            0           .
   OtherMale |   .5652572    1362.98    -0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 17

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -414.07003
Iteration 1:   log likelihood = -352.52233
Iteration 2:   log likelihood = -349.36404
Iteration 3:   log likelihood = -348.14398
Iteration 4:   log likelihood =  -347.6358
Iteration 5:   log likelihood = -346.64897
Iteration 6:   log likelihood = -346.61343
Iteration 7:   log likelihood = -346.61019
Iteration 8:   log likelihood = -346.60962
Iteration 9:   log likelihood = -346.60956
Iteration 10:  log likelihood = -346.60954

Multinomial logistic regression                 Number of obs   =        411
                                                LR chi2(32)     =     134.92
                                                Prob > chi2     =     0.0000
Log likelihood = -346.60954                     Pseudo R2       =     0.1629

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |   1.018149   .0184181     0.99   0.320     .9826826    1.054895
       exper |   .9250049   .0255899    -2.82   0.005     .8761852    .9765447
        male |   .3860093    .101845    -3.61   0.000     .2301527    .6474101
         age |   1.011621   .0252336     0.46   0.643     .9633536    1.062307
```

```
pyperstudw~e |   1.183638    .174765     1.14   0.254     .8862133    1.580882
pyperstudb~k |   1.214923   .1814827     1.30   0.192     .9065634    1.628169
pyperstudl~o |   1.214175   .1788778     1.32   0.188     .9096585    1.620631
pyperstude~s |   .9634485   .0110271    -3.25   0.001     .9420765    .9853054
pyperstudlep |   .9605415    .025348    -1.53   0.127     .9121232     1.01153
pyperstudm~e |   1.048746   .0186997     2.67   0.008     1.012728    1.086044
       Asian |  (omitted)
       Black |   .1447355   .1498194    -1.87   0.062     .0190316    1.100716
      Latino |   1.170151   .8409491     0.22   0.827      .286096    4.785997
       Other |   2.53e-07   .0003199    -0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   5.17e-09   .0001252    -0.00   0.999            0           .
  LatinoMale |   .2763922   .2597961    -1.37   0.171      .043796    1.744282
   OtherMale |   2.919767   4444.857     0.00   0.999            0           .
-------------+----------------------------------------------------------------
2            |
      tenure |   .9399605   .0247901    -2.35   0.019     .8926073    .9898258
       exper |   .9626737   .0366574    -1.00   0.318     .8934421     1.03727
        male |   1.369991   .5955702     0.72   0.469     .5843571    3.211862
         age |   1.020301   .0365843     0.56   0.575     .9510584    1.094584
pyperstudw~e |   .9795953     .19832    -0.10   0.919     .6587493     1.45671
pyperstudb~k |   1.081637   .2204628     0.39   0.700     .7254156    1.612784
pyperstudl~o |   1.031506   .2083996     0.15   0.878     .6942239    1.532652
pyperstude~s |   .9068079   .0156858    -5.66   0.000     .8765796    .9380785
pyperstudlep |   1.006866   .0438602     0.16   0.875     .9244691    1.096607
pyperstudm~e |   1.050451   .0249584     2.07   0.038     1.002655    1.100525
       Asian |  (omitted)
       Black |    .504089   .6970361    -0.50   0.620     .0335349    7.577362
      Latino |   1.832913   2.359422     0.47   0.638     .1470384    22.84825
       Other |   1.29e-06   .0027482    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   2.998823   5.386721     0.61   0.541     .0887067    101.3784
  LatinoMale |   .2812631   .4192892    -0.85   0.395     .0151424    5.224323
   OtherMale |    .331627   870.4304    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |  (base outcome)
------------------------------------------------------------------------------


--------->  region = 18

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -384.10273
Iteration 1:   log likelihood = -338.75137
Iteration 2:   log likelihood = -335.31596
Iteration 3:   log likelihood = -335.10455
Iteration 4:   log likelihood = -335.05631
Iteration 5:   log likelihood = -335.04467
Iteration 6:   log likelihood = -335.04222
Iteration 7:   log likelihood = -335.04171
Iteration 8:   log likelihood = -335.04159
Iteration 9:   log likelihood = -335.04156

Multinomial logistic regression                 Number of obs   =        391
                                                LR chi2(30)     =      98.12
                                                Prob > chi2     =     0.0000
Log likelihood = -335.04156                     Pseudo R2       =     0.1277

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.00811   .0263283     0.31   0.757     .9578062    1.061056
```

```
       exper |   .9444131   .0374393    -1.44   0.149     .8738117    1.020719
        male |   1.475219   .6095054     0.94   0.347     .6564045     3.31544
         age |    1.00072    .034407     0.02   0.983     .9355055    1.070481
pyperstudw~e |   1.048945   .2048036     0.24   0.807     .7154153    1.537969
pyperstudb~k |   1.011621   .2062286     0.06   0.955     .6784101    1.508493
pyperstudl~o |   1.036169    .202496     0.18   0.856     .7064513    1.519773
pyperstude~s |   1.003535   .0162357     0.22   0.827     .9722127    1.035866
pyperstudlep |   .9773854   .0230448    -0.97   0.332     .9332462    1.023612
pyperstudm~e |   1.023618   .0136499     1.75   0.080     .9972109    1.050724
       Asian |  (omitted)
       Black |   6.19e-06   .0062308    -0.01   0.990            0           .
      Latino |   4.578774   3.275141     2.13   0.033     1.126926    18.60387
       Other |   1.13e-06   .0017356    -0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |   7.36e+11   8.82e+14     0.02   0.982            0           .
  LatinoMale |   .7363302   .6211977    -0.36   0.717     .1409175    3.847516
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9901345   .0166706    -0.59   0.556      .957994    1.023353
       exper |   1.140954   .0382154     3.94   0.000     1.068459    1.218368
        male |    1.30407   .3671899     0.94   0.346     .7509762    2.264517
         age |   .9143333   .0280832    -2.92   0.004     .8609152    .9710659
pyperstudw~e |   .8756484   .1229919    -0.95   0.344     .6649235    1.153155
pyperstudb~k |   .8183416   .1220772    -1.34   0.179     .6108795     1.09626
pyperstudl~o |   .8331107   .1178302    -1.29   0.197     .6314135    1.099238
pyperstude~s |   1.074531   .0138275     5.59   0.000     1.047768    1.101977
pyperstudlep |   .9816139   .0141902    -1.28   0.199      .954192    1.009824
pyperstudm~e |   .9940983   .0145864    -0.40   0.687     .9659167    1.023102
       Asian |  (omitted)
       Black |   2.045585   2.607221     0.56   0.574     .1682325    24.87282
      Latino |   1.996645   1.144658     1.21   0.228     .6491048    6.141674
       Other |   2.44e-06   .0021388    -0.01   0.988            0           .
   AsianMale |  (omitted)
   BlackMale |   662187.2   4.31e+08     0.02   0.984            0           .
  LatinoMale |   .4960803   .3515901    -0.99   0.323     .1236729    1.989891
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 19

Iteration 0:   log likelihood = -698.07521
Iteration 1:   log likelihood = -646.47421
Iteration 2:   log likelihood = -644.91419
Iteration 3:   log likelihood = -644.75345
Iteration 4:   log likelihood = -644.72209
Iteration 5:   log likelihood = -644.71546
Iteration 6:   log likelihood = -644.71397
Iteration 7:   log likelihood = -644.71361
Iteration 8:   log likelihood = -644.71354
Iteration 9:   log likelihood = -644.71352

Multinomial logistic regression                 Number of obs   =        648
                                                LR chi2(36)     =     106.72
                                                Prob > chi2     =     0.0000
Log likelihood = -644.71352                     Pseudo R2       =     0.0764

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.043959   .0156963     2.86   0.004     1.013644    1.075181
       exper |   1.024354   .0216133     1.14   0.254     .9828564    1.067603
        male |   1.034277   .2871845     0.12   0.903     .6001864    1.782327
```

```
         age |   .9720888   .0166943    -1.65   0.099      .939913    1.005366
pyperstudw~e |   .8686703   .1043126    -1.17   0.241     .6864993    1.099183
pyperstudb~k |   .8984623   .1127753    -0.85   0.394     .7025168    1.149061
pyperstudl~o |   .8839583    .102734    -1.06   0.289     .7038901    1.110091
pyperstude~s |   .9922649   .0070184    -1.10   0.272     .9786041    1.006116
pyperstudlep |   1.005808   .0068896     0.85   0.398     .9923953    1.019403
pyperstudm~e |    .980195   .0096676    -2.03   0.043     .9614288    .9993274
       Asian |    3666528   6.84e+09     0.01   0.994            0           .
       Black |   1.176086   .8258247     0.23   0.817       .29699    4.657322
      Latino |   1.248742   .3530997     0.79   0.432     .7174362    2.173512
       Other |   1.140751   1.446639     0.10   0.917     .0950043    13.69741
   AsianMale |   .7378147   1490.704    -0.00   1.000            0           .
   BlackMale |   .9572349   1.015476    -0.04   0.967     .1196817    7.656133
  LatinoMale |   1.449862   .5688602     0.95   0.344     .6719762    3.128237
   OtherMale |   .3495443   1391.122    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.051068   .0163046     3.21   0.001     1.019592    1.083515
       exper |   1.108667   .0282013     4.06   0.000     1.054749    1.165342
        male |   .8795642   .2700908    -0.42   0.676     .4818215    1.605643
         age |   .9408847   .0205399    -2.79   0.005     .9014763    .9820158
pyperstudw~e |    1.05091   .1575062     0.33   0.740     .7834134    1.409744
pyperstudb~k |   1.095925   .1691389     0.59   0.553      .809862    1.483032
pyperstudl~o |   1.052433   .1526877     0.35   0.725      .791957     1.39858
pyperstude~s |   .9940124   .0079468    -0.75   0.453     .9785584     1.00971
pyperstudlep |   1.020828   .0076475     2.75   0.006     1.005948    1.035927
pyperstudm~e |   .9942148   .0087102    -0.66   0.508     .9772888    1.011434
       Asian |   1.077699   3283.053     0.00   1.000            0           .
       Black |   .2182266   .2517029    -1.32   0.187     .0227578    2.092593
      Latino |   1.099206   .3391181     0.31   0.759     .6004453    2.012264
       Other |   2.46e-06    .001868    -0.02   0.986            0           .
   AsianMale |    3671687   1.15e+10     0.00   0.996            0           .
   BlackMale |   2.076204   3.469587     0.44   0.662     .0784891       54.92
  LatinoMale |   1.509862   .6563446     0.95   0.343     .6440444    3.539638
   OtherMale |   1.06e+12   2.89e+15     0.01   0.992            0           .
------------------------------------------------------------------------------


---------->  region = 20

Iteration 0:   log likelihood = -1860.7019
Iteration 1:   log likelihood = -1753.0532
Iteration 2:   log likelihood = -1748.7971
Iteration 3:   log likelihood = -1748.7118
Iteration 4:   log likelihood = -1748.6917
Iteration 5:   log likelihood = -1748.6878
Iteration 6:   log likelihood =  -1748.687
Iteration 7:   log likelihood =  -1748.687
Iteration 8:   log likelihood = -1748.6869

Multinomial logistic regression                 Number of obs   =       1948
                                                LR chi2(36)     =     224.03
                                                Prob > chi2     =     0.0000
Log likelihood = -1748.6869                     Pseudo R2       =     0.0602

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.008133   .0094395     0.87   0.387     .9898004    1.026805
       exper |   1.016811   .0136701     1.24   0.215      .990368     1.04396
        male |   1.717896   .2640295     3.52   0.000     1.271079     2.32178
         age |   .9804312   .0113791    -1.70   0.089     .9583803    1.002989
pyperstudw~e |   .9510251   .0483771    -0.99   0.324     .8607812     1.05073
pyperstudb~k |   .9552967   .0505257    -0.86   0.387      .861228     1.05964
```

```
pyperstudl~o |   .9527813   .0481646    -0.96   0.339     .8629063    1.052017
pyperstude~s |   .9991423   .0052612    -0.16   0.871     .9888836    1.009507
pyperstudlep |    .985518   .0066898    -2.15   0.032      .972493    .9987174
pyperstudm~e |   .9853018   .0068196    -2.14   0.032     .9720258     .998759
       Asian |   5.02e-06    .002916    -0.02   0.983            0           .
       Black |   1.492566   .5172459     1.16   0.248     .7567479    2.943851
      Latino |   1.354513   .2571203     1.60   0.110     .9336928       1.965
       Other |   4.037222   4.077386     1.38   0.167      .557716    29.22484
   AsianMale |   119743.5   4.98e+08     0.00   0.998            0           .
   BlackMale |   .8991752   .4484646    -0.21   0.831     .3383036    2.389912
  LatinoMale |   1.214724   .3238968     0.73   0.466     .7202967    2.048538
   OtherMale |   .6102468   .8725259    -0.35   0.730     .0370224    10.05881
-------------+----------------------------------------------------------------
3            |
      tenure |   1.037592   .0096848     3.95   0.000     1.018782    1.056748
       exper |   1.072448   .0167896     4.47   0.000     1.040041    1.105866
        male |   1.601214   .2645703     2.85   0.004     1.158256    2.213576
         age |   .9637719   .0129838    -2.74   0.006     .9386572    .9895587
pyperstudw~e |   1.094611   .0639658     1.55   0.122     .9761539    1.227444
pyperstudb~k |   1.046291   .0635612     0.74   0.456     .9288441    1.178589
pyperstudl~o |   1.048532   .0611206     0.81   0.416     .9353281    1.175438
pyperstude~s |   1.042197   .0060561     7.11   0.000     1.030395    1.054135
pyperstudlep |    1.00657   .0056073     1.18   0.240     .9956392     1.01762
pyperstudm~e |    .989021   .0067677    -1.61   0.107      .975845    1.002375
       Asian |   1.622802   1.955184     0.40   0.688     .1530104    17.21116
       Black |   1.336639   .4304076     0.90   0.368     .7110839    2.512507
      Latino |   1.175129   .2212497     0.86   0.391      .812501    1.699602
       Other |   2.304818   2.887443     0.67   0.505     .1978171    26.85404
   AsianMale |    4627550   9.58e+09     0.01   0.994            0           .
   BlackMale |   .6900111   .3557323    -0.72   0.472     .2512018     1.89535
  LatinoMale |    1.15488   .3134532     0.53   0.596     .6784329    1.965924
   OtherMale |   .6293666   1.108897    -0.26   0.793     .0199136    19.89103
------------------------------------------------------------------------------
by school type
. bysort schooltype: mlogit admin  tenure exper  male age pyperstudwhite pyperstudblack
pyperstudlatino pyperstudecodis pyperstudlep pyperstudmobile Asi
> an Black Latino Other AsianMale BlackMale LatinoMale OtherMale if validcert1996==1, rrr


---------->  schooltype =

note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -41.497976
Iteration 1:   log likelihood = -23.698168
Iteration 2:   log likelihood = -18.539897
Iteration 3:   log likelihood = -14.066727
Iteration 4:   log likelihood =  -10.06324
Iteration 5:   log likelihood = -9.7847101
Iteration 6:   log likelihood = -9.6582531
Iteration 7:   log likelihood = -9.6434883
Iteration 8:   log likelihood = -9.6392062
Iteration 9:   log likelihood = -9.6384389
Iteration 10:  log likelihood = -9.6382573
Iteration 11:  log likelihood = -9.6382152
Iteration 12:  log likelihood = -9.6382058
Iteration 13:  log likelihood = -9.6382037
Iteration 14:  log likelihood = -9.6382034

Multinomial logistic regression                 Number of obs   =         48
                                                LR chi2(30)     =      63.72
                                                Prob > chi2     =     0.0003
Log likelihood = -9.6382034                     Pseudo R2       =     0.7677

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
```

```
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.981949   11935.92     0.00   1.000            0           .
       exper |   4.902063   83885.54     0.00   1.000            0           .
        male |   1.61e+18   1.19e+23     0.00   1.000            0           .
         age |   .0499956   909.5627    -0.00   1.000            0           .
pyperstudw~e |   1.29e-06   .0084507    -0.00   0.998            0           .
pyperstudb~k |   9.53e-07   .0063753    -0.00   0.998            0           .
pyperstudl~o |   2.76e-06   .0186352    -0.00   0.998            0           .
pyperstude~s |   .3488098   937.2229    -0.00   1.000            0           .
pyperstudlep |   .0517178   379.6189    -0.00   1.000            0           .
pyperstudm~e |   2.718555   2489.204     0.00   0.999            0           .
       Asian |   1.35e+26   1.55e+31     0.00   1.000            0           .
       Black |   6.16e+45   7.42e+50     0.00   0.999            0           .
      Latino |   6.56e+69   8.27e+74     0.00   0.999            0           .
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   9.42e-22   1.23e-16    -0.00   1.000            0           .
  LatinoMale |   1.53e-22   1.52e-17    -0.00   1.000            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.194901   .1560687     1.36   0.173     .9250269    1.543509
       exper |   1.516714   .3951871     1.60   0.110     .9101625    2.527483
        male |   44.71401   81.51372     2.08   0.037     1.255167    1592.889
         age |   .6331505   .1861339    -1.55   0.120     .3558527    1.126532
pyperstudw~e |   1.320319   .6081074     0.60   0.546     .5353474    3.256282
pyperstudb~k |   1.376322   .6472623     0.68   0.497     .5475371    3.459605
pyperstudl~o |   1.144199   .5432291     0.28   0.777     .4512094    2.901515
pyperstude~s |   1.098641   .0958625     1.08   0.281      .925942    1.303551
pyperstudlep |   1.315362   .2703665     1.33   0.182      .879194    1.967912
pyperstudm~e |   1.126619   .0722476     1.86   0.063     .9935534    1.277505
       Asian |   50.22272   335.4284     0.59   0.558     .0001037    2.43e+07
       Black |   .2142294   12.57183    -0.03   0.979     2.39e-51    1.92e+49
      Latino |   5.23e-12   2.88e-07    -0.00   1.000            0           .
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   1.64e-17   5.84e-10    -0.00   1.000            0           .
  LatinoMale |   3.96e+08   2.18e+13     0.00   1.000            0           .
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  schooltype = Both Elem/Sec

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -659.94172
Iteration 1:   log likelihood = -601.10066
Iteration 2:   log likelihood = -595.34771
Iteration 3:   log likelihood = -595.25834
Iteration 4:   log likelihood =  -595.2399
Iteration 5:   log likelihood = -595.23694
Iteration 6:   log likelihood = -595.23622
Iteration 7:   log likelihood = -595.23607
Iteration 8:   log likelihood = -595.23604
Iteration 9:   log likelihood = -595.23603

Multinomial logistic regression                 Number of obs   =        717
                                                LR chi2(32)     =     129.41
                                                Prob > chi2     =     0.0000
Log likelihood = -595.23603                     Pseudo R2       =     0.0980

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
```

```
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.018463     .02129     0.88   0.381     .9775781    1.061057
       exper |   .9571279   .0229511    -1.83   0.068     .9131854    1.003185
        male |    .991894   .3099635    -0.03   0.979     .5376104     1.83005
         age |   .9743871   .0206838    -1.22   0.222     .9346792    1.015782
pyperstudw~e |   .9355789   .0383839    -1.62   0.105     .8632931    1.013917
pyperstudb~k |   .9397895   .0402535    -1.45   0.147      .864115    1.022091
pyperstudl~o |   .9490959   .0397173    -1.25   0.212     .8743584    1.030222
pyperstude~s |   .9880376   .0066778    -1.78   0.075     .9750357    1.001213
pyperstudlep |   1.001776    .013426     0.13   0.895     .9758045    1.028439
pyperstudm~e |   .9961839   .0049164    -0.77   0.439     .9865944    1.005867
       Asian |   2.487352   9933.136     0.00   1.000            0           .
       Black |   2.216913   1.107939     1.59   0.111     .8324276    5.904062
      Latino |   2.393724    1.62816     1.28   0.199     .6311098    9.079108
       Other |   5.77e-06    .006569    -0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |   .8153186   .5900706    -0.28   0.778     .1973728    3.367964
  LatinoMale |   1.010802   .8701419     0.01   0.990     .1870315    5.462823
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.014556   .0122313     1.20   0.231     .9908644    1.038815
       exper |   1.041758   .0182933     2.33   0.020     1.006513    1.078236
        male |   2.202964    .457915     3.80   0.000     1.465797     3.31086
         age |   .9536548   .0160731    -2.82   0.005     .9226667    .9856836
pyperstudw~e |   1.201216   .0718313     3.07   0.002     1.068366    1.350585
pyperstudb~k |    1.20174    .073222     3.02   0.003     1.066465    1.354173
pyperstudl~o |   1.194998   .0721628     2.95   0.003      1.06161    1.345144
pyperstude~s |   1.009265   .0050639     1.84   0.066     .9993884    1.019239
pyperstudlep |   .9982231   .0114861    -0.15   0.877     .9759627    1.020991
pyperstudm~e |   .9931578   .0039933    -1.71   0.088     .9853618    1.001016
       Asian |    7522063   1.19e+10     0.01   0.992            0           .
       Black |   .5678672   .3191674    -1.01   0.314     .1887263    1.708682
      Latino |   1.432205   .8970674     0.57   0.566     .4196155     4.88831
       Other |   5.689079   6.594997     1.50   0.134     .5865387    55.18071
   AsianMale |  (omitted)
   BlackMale |   1.867153   1.278522     0.91   0.362     .4878933    7.145539
  LatinoMale |   1.560236   1.132498     0.61   0.540     .3761364    6.471949
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  schooltype = Elementary

Iteration 0:   log likelihood = -8880.0861
Iteration 1:   log likelihood = -8325.2589
Iteration 2:   log likelihood = -8319.6123
Iteration 3:   log likelihood = -8319.6075
Iteration 4:   log likelihood = -8319.6075

Multinomial logistic regression                 Number of obs   =       8515
                                                LR chi2(36)     =    1120.96
                                                Prob > chi2     =     0.0000
Log likelihood = -8319.6075                     Pseudo R2       =     0.0631

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.002386   .0050554     0.47   0.637      .992526    1.012343
       exper |   1.004137   .0063947     0.65   0.517     .9916818    1.016749
        male |   1.933534   .1819612     7.01   0.000     1.607855    2.325181
```

```
         age |   .9834078   .0050556    -3.25   0.001     .9735487    .9933668
pyperstudw~e |   .9776554   .0074576    -2.96   0.003     .9631474    .9923818
pyperstudb~k |   .9823106   .0078931    -2.22   0.026     .9669615    .9979034
pyperstudl~o |    .984386   .0075029    -2.06   0.039     .9697898    .9992018
pyperstude~s |   .9836631   .0021757    -7.45   0.000     .9794081    .9879366
pyperstudlep |   1.009403   .0024743     3.82   0.000     1.004566    1.014265
pyperstudm~e |   1.018049   .0044939     4.05   0.000     1.009279    1.026895
       Asian |    .381936   .2912453    -1.26   0.207     .0856854     1.70245
       Black |   1.346077   .1566166     2.55   0.011     1.071599     1.69086
      Latino |   1.095838   .1168256     0.86   0.391     .8892031     1.35049
       Other |   1.078272   .4305424     0.19   0.850     .4930067    2.358327
   AsianMale |   6.308151   6.865126     1.69   0.091     .7473846     53.2427
   BlackMale |    .756787   .1689845    -1.25   0.212     .4885479    1.172304
  LatinoMale |   .6826862   .1229236    -2.12   0.034     .4796836    .9715997
   OtherMale |   .4305493   .3883656    -0.93   0.350     .0734884    2.522474
-------------+----------------------------------------------------------------
3            |
      tenure |   1.015044   .0039991     3.79   0.000     1.007236    1.022913
       exper |   1.053604   .0058242     9.45   0.000     1.042251    1.065082
        male |   3.458907   .2585873    16.60   0.000     2.987467    4.004742
         age |   1.001264   .0046469     0.27   0.785     .9921978    1.010414
pyperstudw~e |   1.013749   .0080046     1.73   0.084     .9981808    1.029559
pyperstudb~k |   1.003253   .0083171     0.39   0.695     .9870833    1.019687
pyperstudl~o |   1.005769   .0080331     0.72   0.471     .9901467    1.021637
pyperstude~s |    1.00253   .0020097     1.26   0.208     .9985985    1.006477
pyperstudlep |   1.000837   .0021185     0.40   0.693     .9966934    1.004998
pyperstudm~e |   1.005834   .0040067     1.46   0.144     .9980112    1.013717
       Asian |   .6938116   .3359935    -0.75   0.450     .2685521    1.792481
       Black |   .9849067   .1079208    -0.14   0.890     .7945569    1.220858
      Latino |   1.384665   .1279464     3.52   0.000     1.155292    1.659579
       Other |   .4925499   .2173317    -1.60   0.109     .2074282    1.169587
   AsianMale |   1.454248   1.269241     0.43   0.668     .2628608    8.045468
   BlackMale |   .6051978   .1205661    -2.52   0.012     .4095652    .8942762
  LatinoMale |   .4684886    .069479    -5.11   0.000     .3503175    .6265218
   OtherMale |   .8524088   .6123839    -0.22   0.824     .2085121    3.484693
------------------------------------------------------------------------------


---------->  schooltype = Middle

Iteration 0:   log likelihood = -4943.6252
Iteration 1:   log likelihood = -4648.0619
Iteration 2:   log likelihood = -4639.5346
Iteration 3:   log likelihood = -4638.8665
Iteration 4:   log likelihood = -4638.7634
Iteration 5:   log likelihood = -4638.7384
Iteration 6:   log likelihood = -4638.7332
Iteration 7:   log likelihood = -4638.7321
Iteration 8:   log likelihood = -4638.7319
Iteration 9:   log likelihood = -4638.7318
Iteration 10:  log likelihood = -4638.7318

Multinomial logistic regression                 Number of obs   =       4758
                                                LR chi2(36)     =     609.79
                                                Prob > chi2     =     0.0000
Log likelihood = -4638.7318                     Pseudo R2       =     0.0617

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.002735   .0057074     0.48   0.631     .9916112    1.013984
       exper |   1.007597   .0074647     1.02   0.307     .9930723    1.022334
        male |   1.711188   .1471077     6.25   0.000     1.445844    2.025228
         age |   .9616592   .0060502    -6.21   0.000     .9498739    .9735908
```

```
pyperstudw~e |   .9671112    .010103    -3.20   0.001      .947511    .9871168
pyperstudb~k |   .9671132   .0106121    -3.05   0.002     .9465359    .9881377
pyperstudl~o |   .9654904   .0102481    -3.31   0.001      .945612    .9857867
pyperstude~s |   .9958297    .002793    -1.49   0.136     .9903705    1.001319
pyperstudlep |   1.007315   .0041901     1.75   0.080     .9991358    1.015561
pyperstudm~e |   1.002253   .0041887     0.54   0.590     .9940773    1.010497
       Asian |   .5491703   .6117264    -0.54   0.591     .0618792    4.873816
       Black |   1.145846   .1720172     0.91   0.364     .8537716    1.537838
      Latino |   2.020231   .3113629     4.56   0.000     1.493522    2.732689
       Other |   1.72e-07   .0001984    -0.01   0.989            0           .
   AsianMale |   4.62e-07    .000457    -0.01   0.988            0           .
   BlackMale |   1.708197   .3450531     2.65   0.008     1.149732    2.537929
  LatinoMale |   .9273759   .1775926    -0.39   0.694     .6371631    1.349774
   OtherMale |    4936168   5.70e+09     0.01   0.989            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.007944   .0057152     1.40   0.163     .9968044    1.019208
       exper |   1.071767   .0096239     7.72   0.000      1.05307    1.090797
        male |   2.625476   .2460119    10.30   0.000     2.184987    3.154766
         age |   .9558847   .0076566    -5.63   0.000     .9409952    .9710097
pyperstudw~e |   1.018764   .0139702     1.36   0.175     .9917479    1.046517
pyperstudb~k |   .9998826    .014461    -0.01   0.994     .9719375    1.028631
pyperstudl~o |   1.001727   .0140816     0.12   0.902     .9745039     1.02971
pyperstude~s |   1.013584   .0033744     4.05   0.000     1.006991    1.020219
pyperstudlep |   .9963419   .0049633    -0.74   0.462     .9866614    1.006117
pyperstudm~e |   .9848642   .0059353    -2.53   0.011     .9732996    .9965662
       Asian |   3.39e-07    .000554    -0.01   0.993            0           .
       Black |   .9682253   .1964107    -0.16   0.874      .650586    1.440947
      Latino |   2.154496   .4019422     4.11   0.000     1.494672    3.105601
       Other |   .4196902   .4462618    -0.82   0.414     .0522199    3.373043
   AsianMale |    4974008   8.13e+09     0.01   0.992            0           .
   BlackMale |   1.343966   .3477883     1.14   0.253     .8093129    2.231825
  LatinoMale |   .7684593   .1690492    -1.20   0.231     .4993094    1.182693
   OtherMale |   3.982302   4.974411     1.11   0.269     .3442496    46.06754
------------------------------------------------------------------------------


---------->  schooltype = Secondary

Iteration 0:   log likelihood =  -5795.954
Iteration 1:   log likelihood = -5523.8066
Iteration 2:   log likelihood = -5512.3603
Iteration 3:   log likelihood = -5511.8952
Iteration 4:   log likelihood = -5511.8046
Iteration 5:   log likelihood = -5511.7853
Iteration 6:   log likelihood = -5511.7808
Iteration 7:   log likelihood = -5511.7798
Iteration 8:   log likelihood = -5511.7795
Iteration 9:   log likelihood = -5511.7795

Multinomial logistic regression                 Number of obs   =       6104
                                                LR chi2(36)     =     568.35
                                                Prob > chi2     =     0.0000
Log likelihood = -5511.7795                     Pseudo R2       =     0.0490

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9983364   .0044998    -0.37   0.712     .9895558    1.007195
       exper |   1.000075   .0062879     0.01   0.991     .9878262    1.012475
        male |   1.399139   .1067558     4.40   0.000     1.204795    1.624832
         age |   .9809833   .0056019    -3.36   0.001      .970065    .9920244
pyperstudw~e |   .9822096   .0074013    -2.38   0.017     .9678098    .9968236
pyperstudb~k |   .9824808    .007713    -2.25   0.024     .9674794    .9977149
```

```
pyperstudl~o |   .9810331   .0074392    -2.53   0.012     .9665603    .9957226
pyperstude~s |   .9959495   .0022405    -1.80   0.071     .9915679     1.00035
pyperstudlep |   1.006849   .0038909     1.77   0.077     .9992514    1.014504
pyperstudm~e |   1.000945   .0029405     0.32   0.748     .9951985    1.006725
       Asian |   1.464719   1.022094     0.55   0.584     .3730595    5.750829
       Black |   1.815558   .2719127     3.98   0.000     1.353715    2.434966
      Latino |   1.522409   .2321159     2.76   0.006     1.129151     2.05263
       Other |   .5277606   .3316516    -1.02   0.309     .1540036    1.808602
   AsianMale |   1.920645   1.747975     0.72   0.473      .322679    11.43204
   BlackMale |   1.294322   .2520734     1.32   0.185     .8836255    1.895905
  LatinoMale |   1.727149   .3052303     3.09   0.002     1.221522    2.442071
   OtherMale |   1.716109   1.325804     0.70   0.485     .3775176     7.80104
-------------+----------------------------------------------------------------
3            |
      tenure |   .9775973   .0050058    -4.42   0.000     .9678352    .9874578
       exper |   1.054041   .0086523     6.41   0.000     1.037219    1.071137
        male |   2.482047   .2491415     9.06   0.000     2.038772      3.0217
         age |   .9743076   .0076684    -3.31   0.001     .9593932    .9894539
pyperstudw~e |    1.05901   .0143145     4.24   0.000     1.031322    1.087441
pyperstudb~k |   1.042413   .0146179     2.96   0.003     1.014153    1.071461
pyperstudl~o |   1.037715    .014175     2.71   0.007     1.010301    1.065872
pyperstude~s |   1.018775   .0028632     6.62   0.000     1.013179    1.024403
pyperstudlep |   1.005518   .0051282     1.08   0.281     .9955175     1.01562
pyperstudm~e |   1.014427   .0031136     4.67   0.000     1.008343    1.020548
       Asian |   1.85e-06   .0014811    -0.02   0.987            0           .
       Black |   1.251738   .3162964     0.89   0.374     .7628289    2.053998
      Latino |   1.239245   .2899208     0.92   0.359     .7834636    1.960177
       Other |   1.30e-06   .0007478    -0.02   0.981            0           .
   AsianMale |   983382.9   7.88e+08     0.02   0.986            0           .
   BlackMale |   .9140138   .2827663    -0.29   0.771     .4984465     1.67605
  LatinoMale |   1.135275    .295834     0.49   0.626     .6812272    1.891952
   OtherMale |   794221.5   4.55e+08     0.02   0.981            0           .
------------------------------------------------------------------------------
```

1996-97

```
. mlogit admin  tenure exper  pyperstudlep pyperstudecodis pyperstudwhite pyperstudblack
pyperstudlatino pyperstudmobile male age Asian Black Latino Oth
> er AsianMale BlackMale LatinoMale OtherMale if validcert1997a==1, rrr

Iteration 0:   log likelihood = -21210.402
Iteration 1:   log likelihood = -20217.384
Iteration 2:   log likelihood = -20196.217
Iteration 3:   log likelihood = -20196.162
Iteration 4:   log likelihood = -20196.162

Multinomial logistic regression                 Number of obs   =      20441
                                                LR chi2(36)     =    2028.48
                                                Prob > chi2     =     0.0000
Log likelihood = -20196.162                     Pseudo R2       =     0.0478

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.00246   .0027838     0.88   0.376     .9970189    1.007931
       exper |   .9986258   .0035921    -0.38   0.702     .9916102    1.005691
pyperstudlep |   1.009195   .0016405     5.63   0.000     1.005985    1.012415
pyperstude~s |   .9945864   .0011657    -4.63   0.000     .9923043    .9968738
pyperstudw~e |   .9714019   .0045952    -6.13   0.000     .9624372    .9804501
pyperstudb~k |   .9726213   .0048474    -5.57   0.000     .9631669    .9821685
pyperstudl~o |   .9729043   .0046522    -5.74   0.000     .9638288    .9820653
pyperstudm~e |   .9985073   .0016216    -0.92   0.358     .9953341    1.001691
        male |   1.382466   .0609109     7.35   0.000     1.268092    1.507155
         age |   .9776005    .003037    -7.29   0.000     .9716662     .983571
```

```
       Asian |    .719315   .3094237    -0.77   0.444     .3095726    1.671382
       Black |    1.35135    .101766     4.00   0.000     1.165913    1.566279
      Latino |   1.313631   .0936884     3.82   0.000     1.142262     1.51071
       Other |    .470598   .1713537    -2.07   0.038     .2305215    .9607021
   AsianMale |   1.553764   .9564497     0.72   0.474     .4649556    5.192288
   BlackMale |   1.488147   .1630958     3.63   0.000     1.200486    1.844738
  LatinoMale |   1.319657    .125286     2.92   0.003     1.095594    1.589545
   OtherMale |   1.920204   .9507005     1.32   0.188      .727636    5.067346
-------------+----------------------------------------------------------------
3            |
      tenure |   1.007059   .0025021     2.83   0.005     1.002167    1.011975
       exper |    1.05063   .0039087    13.28   0.000     1.042997    1.058319
pyperstudlep |   1.006987   .0016215     4.32   0.000     1.003814     1.01017
pyperstude~s |   1.026249   .0012687    20.96   0.000     1.023766    1.028739
pyperstudw~e |   1.009272   .0055925     1.67   0.096     .9983703    1.020293
pyperstudb~k |   .9864713   .0057711    -2.33   0.020     .9752248    .9978476
pyperstudl~o |   .9838825   .0055497    -2.88   0.004     .9730652    .9948201
pyperstudm~e |   .9964177   .0017932    -1.99   0.046     .9929093    .9999385
        male |   1.636543   .0680308    11.85   0.000     1.508492    1.775463
         age |   .9847931    .003291    -4.59   0.000     .9783639    .9912646
       Asian |   .4766782   .2228892    -1.58   0.113     .1906397    1.191893
       Black |   .9367841   .0779482    -0.78   0.433     .7958157    1.102723
      Latino |   1.333254   .0961207     3.99   0.000     1.157566    1.535607
       Other |   .5124044   .1814385    -1.89   0.059     .2559816    1.025692
   AsianMale |   4.050835    2.40854     2.35   0.019     1.263102    12.99124
   BlackMale |   1.195798   .1477058     1.45   0.148     .9386785    1.523347
  LatinoMale |   1.022215   .0986177     0.23   0.820     .8461026    1.234985
   OtherMale |   2.299282   1.077965     1.78   0.076     .9173315    5.763127
------------------------------------------------------------------------------
. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=20441)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |      8.038    2    0.018
       exper |    205.757    2    0.000
pyperstudlep |     38.005    2    0.000
pyperstude~s |    602.008    2    0.000
pyperstudw~e |     51.629    2    0.000
pyperstudb~k |     31.212    2    0.000
pyperstudl~o |     34.093    2    0.000
pyperstudm~e |      4.217    2    0.121
        male |    156.336    2    0.000
         age |     61.405    2    0.000
       Asian |      3.014    2    0.222
       Black |     19.496    2    0.000
      Latino |     23.304    2    0.000
       Other |      7.494    2    0.024
   AsianMale |      6.001    2    0.050
   BlackMale |     13.243    2    0.001
  LatinoMale |      9.394    2    0.009
   OtherMale |      4.159    2    0.125
---------------------------------------

**** Wald tests for independent variables (N=20441)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |      8.018    2    0.018
       exper |    194.441    2    0.000
pyperstudlep |     37.739    2    0.000
pyperstude~s |    559.974    2    0.000
```

```
pyperstudw~e |     52.826    2    0.000
pyperstudb~k |     31.335    2    0.000
pyperstudl~o |     34.134    2    0.000
pyperstudm~e |      4.146    2    0.126
        male |    155.488    2    0.000
         age |     60.535    2    0.000
       Asian |      2.750    2    0.253
       Black |     19.869    2    0.000
      Latino |     23.324    2    0.000
       Other |      6.840    2    0.033
   AsianMale |      5.545    2    0.063
   BlackMale |     13.201    2    0.001
  LatinoMale |      9.386    2    0.009
   OtherMale |      4.042    2    0.132
-------------------------------------

**** Hausman tests of IIA assumption (N=20441)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+--------------------------------
       2 |  -120.540   18     ---    ---
       3 |   -13.512   18     ---    ---
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=20441)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+--------------------------------------------------------
       2 |  -4713.991  -4701.535  24.912   19    0.163   for Ho
       3 |  -4588.324  -4574.977  26.692   19    0.112   for Ho
-----------------------------------------------------------------

**** Wald tests for combining alternatives (N=20441)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1216.471   18    0.000
       2-       1  |  481.259   18    0.000
       3-       1  | 1165.462   18    0.000
-----------------------------------------------

**** LR tests for combining alternatives (N=20441)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1355.258   18    0.000
       2-       1  |  493.511   18    0.000
       3-       1  | 1308.557   18    0.000
-----------------------------------------------

by region
. bysort region: mlogit admin  tenure exper  pyperstudlep pyperstudecodis pyperstudwhite
pyperstudblack pyperstudlatino pyperstudmobile male age Asian B
> lack Latino Other AsianMale BlackMale LatinoMale OtherMale if validcert1997a==1, rrr
```

```
---------->  region = 1

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1420.1443
Iteration 1:   log likelihood = -1337.0725
Iteration 2:   log likelihood = -1334.6563
Iteration 3:   log likelihood = -1334.4806
Iteration 4:   log likelihood = -1334.4418
Iteration 5:   log likelihood = -1334.4338
Iteration 6:   log likelihood = -1334.4325
Iteration 7:   log likelihood = -1334.4322
Iteration 8:   log likelihood = -1334.4322
Iteration 9:   log likelihood = -1334.4321

Multinomial logistic regression                 Number of obs   =       1331
                                                LR chi2(34)     =     171.42
                                                Prob > chi2     =     0.0000
Log likelihood = -1334.4321                     Pseudo R2       =     0.0604

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.003976   .0105133     0.38   0.705     .9835806    1.024795
       exper |   1.036955    .016156     2.33   0.020     1.005768    1.069108
pyperstudlep |   .9994065   .0039196    -0.15   0.880     .9917538    1.007118
pyperstude~s |   .9962885   .0063286    -0.59   0.558     .9839615     1.00877
pyperstudw~e |   1.119111   .1352466     0.93   0.352     .8830874    1.418216
pyperstudb~k |   1.145232   .1540419     1.01   0.313     .8798342    1.490686
pyperstudl~o |   1.114601   .1275195     0.95   0.343     .8907076    1.394775
pyperstudm~e |   1.001952   .0072439     0.27   0.787     .9878548    1.016251
        male |   1.557083    .450914     1.53   0.126        .8827    2.746694
         age |   .9528228   .0131561    -3.50   0.000      .927383    .9789603
       Asian |   7.80e-07   .0010608    -0.01   0.992            0           .
       Black |   9.77e-07   .0018777    -0.01   0.994            0           .
      Latino |   1.176582   .2732583     0.70   0.484     .7463328    1.854862
       Other |   5.28e-07   .0007208    -0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |    1688964   3.24e+09     0.01   0.994            0           .
  LatinoMale |   1.302385    .425009     0.81   0.418     .6870145    2.468955
   OtherMale |    2612769   3.57e+09     0.01   0.991            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.003604   .0101597     0.36   0.722     .9838873    1.023715
       exper |   1.111236   .0205108     5.71   0.000     1.071754    1.152172
pyperstudlep |   1.014907   .0041039     3.66   0.000     1.006895    1.022983
pyperstude~s |   1.019546   .0076336     2.59   0.010     1.004693    1.034618
pyperstudw~e |   1.142667   .1377865     1.11   0.269      .902151    1.447306
pyperstudb~k |   1.146459   .1565768     1.00   0.317     .8772153    1.498341
pyperstudl~o |   1.081551   .1232985     0.69   0.492     .8649854    1.352338
pyperstudm~e |   1.012017   .0076736     1.58   0.115     .9970879    1.027169
        male |   .6368285   .2183983    -1.32   0.188     .3251664    1.247209
         age |   .9462251   .0158787    -3.29   0.001     .9156096    .9778643
       Asian |   2.37e-07    .000329    -0.01   0.991            0           .
       Black |   2.68e-06   .0053728    -0.01   0.995            0           .
      Latino |   .9523497   .2192902    -0.21   0.832     .6064525    1.495533
       Other |   1.29e-07   .0001625    -0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   .7518583    1724.81    -0.00   1.000            0           .
  LatinoMale |     2.7961   1.057391     2.72   0.007     1.332468    5.867439
   OtherMale |   1.82e+07   2.29e+10     0.01   0.989            0           .
------------------------------------------------------------------------------
```

```
---------->  region = 2

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -811.02632
Iteration 1:   log likelihood = -757.02525
Iteration 2:   log likelihood = -755.23998
Iteration 3:   log likelihood = -754.11612
Iteration 4:   log likelihood = -754.10577
Iteration 5:   log likelihood = -754.10329
Iteration 6:   log likelihood =  -754.1028
Iteration 7:   log likelihood = -754.10271
Iteration 8:   log likelihood = -754.10269

Multinomial logistic regression                 Number of obs   =        845
                                                LR chi2(32)     =     113.85
                                                Prob > chi2     =     0.0000
Log likelihood = -754.10269                     Pseudo R2       =     0.0702

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.005541    .016484     0.34   0.736     .9737465    1.038374
       exper |   .9793046   .0207122    -0.99   0.323     .9395393    1.020753
pyperstudlep |   .9922119   .0216153    -0.36   0.720     .9507384    1.035495
pyperstude~s |   1.001104   .0062976     0.18   0.861     .9888368    1.013524
pyperstudw~e |   .9618467   .0663024    -0.56   0.573     .8402926    1.100985
pyperstudb~k |   .9768717   .0702637    -0.33   0.745      .848424    1.124766
pyperstudl~o |   .9632869   .0635364    -0.57   0.571     .8464712    1.096224
pyperstudm~e |   .9957227   .0084131    -0.51   0.612      .979369    1.012349
        male |   1.357768   .3638151     1.14   0.254     .8030554     2.29565
         age |   .9816961   .0164296    -1.10   0.270      .950017    1.014431
       Asian |  (omitted)
       Black |   1.680076   1.105703     0.79   0.430     .4625203    6.102773
      Latino |   .8344169   .2328396    -0.65   0.517     .4829029    1.441805
       Other |   7.908229   9.381571     1.74   0.081      .773205    80.88422
   AsianMale |  (omitted)
   BlackMale |   1.339136   1.272261     0.31   0.759     .2080322    8.620223
  LatinoMale |   1.701649   .6848838     1.32   0.187     .7731726    3.745102
   OtherMale |   .6508821   1.127583    -0.25   0.804     .0218216     19.4141
-------------+----------------------------------------------------------------
3            |
      tenure |   .9856097   .0124496    -1.15   0.251     .9615086    1.010315
       exper |   1.099789   .0226079     4.63   0.000     1.056359    1.145004
pyperstudlep |    1.00526   .0165152     0.32   0.749     .9734065    1.038156
pyperstude~s |   1.028846   .0063071     4.64   0.000     1.016559    1.041283
pyperstudw~e |   1.062808   .0691057     0.94   0.349      .935639    1.207262
pyperstudb~k |    1.03959   .0720736     0.56   0.575     .9075055    1.190899
pyperstudl~o |   1.038565   .0647413     0.61   0.544     .9191194    1.173532
pyperstudm~e |   .9943553   .0080725    -0.70   0.486     .9786588    1.010304
        male |   1.244437   .3239225     0.84   0.401     .7471505    2.072706
         age |   .9697051   .0177842    -1.68   0.093     .9354677    1.005196
       Asian |  (omitted)
       Black |    .966072   .7184557    -0.05   0.963     .2248959    4.149899
      Latino |   1.051773   .2663097     0.20   0.842     .6403198    1.727614
       Other |   7.05e-06   .0062514    -0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |   2.246057   2.304394     0.79   0.430     .3006843    16.77763
  LatinoMale |     1.8383    .671036     1.67   0.095     .8988797    3.759509
   OtherMale |   2.164626   2423.712     0.00   0.999            0           .
------------------------------------------------------------------------------


---------->  region = 3
```

```
note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -335.00463
Iteration 1:   log likelihood = -303.05839
Iteration 2:   log likelihood = -302.60498
Iteration 3:   log likelihood = -301.47464
Iteration 4:   log likelihood = -301.38675
Iteration 5:   log likelihood = -301.38209
Iteration 6:   log likelihood = -301.38124
Iteration 7:   log likelihood = -301.38105
Iteration 8:   log likelihood =   -301.381
Iteration 9:   log likelihood = -301.38099

Multinomial logistic regression                 Number of obs   =        329
                                                LR chi2(30)     =      67.25
                                                Prob > chi2     =     0.0001
Log likelihood = -301.38099                     Pseudo R2       =     0.1004

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.007944   .0257796     0.31   0.757      .958662    1.059759
       exper |   .9500072   .0349703    -1.39   0.164     .8838807    1.021081
pyperstudlep |   .9853841   .0548582    -0.26   0.791     .8835224     1.09899
pyperstude~s |   .9888146   .0151738    -0.73   0.464     .9595172    1.019006
pyperstudw~e |   .9931697   .0586211    -0.12   0.908     .8846713    1.114975
pyperstudb~k |   1.040226   .0588679     0.70   0.486      .931016    1.162248
pyperstudl~o |   1.012834   .0591658     0.22   0.827     .9032638    1.135697
pyperstudm~e |   1.006552    .018479     0.36   0.722     .9709779     1.04343
        male |   .8242365   .3246442    -0.49   0.624     .3808789    1.783679
         age |   1.003277    .031667     0.10   0.917     .9430912    1.067303
       Asian |  (omitted)
       Black |   2.914354   2.534996     1.23   0.219     .5298349    16.03038
      Latino |   .6196537   .5463616    -0.54   0.587     .1100593    3.488761
       Other |   3.34e-06   .0025098    -0.02   0.987            0           .
   AsianMale |  (omitted)
   BlackMale |   1.260653   2.049236     0.14   0.887     .0521119    30.49677
  LatinoMale |   3.615938   4.035047     1.15   0.249     .4058447    32.21677
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9830978   .0175268    -0.96   0.339     .9493392    1.018057
       exper |   1.024768   .0302015     0.83   0.406     .9672511    1.085705
pyperstudlep |   1.075437   .0395229     1.98   0.048     1.000698    1.155759
pyperstude~s |   1.034549    .012234     2.87   0.004     1.010846    1.058807
pyperstudw~e |   1.086279   .0450865     1.99   0.046      1.00141    1.178341
pyperstudb~k |   1.068056   .0434892     1.62   0.106      .986131    1.156787
pyperstudl~o |   1.051101   .0437477     1.20   0.231     .9687613    1.140439
pyperstudm~e |   1.013981   .0162031     0.87   0.385     .9827153    1.046241
        male |   3.214393   .9948877     3.77   0.000     1.752441    5.895961
         age |   1.005262   .0278854     0.19   0.850     .9520664    1.061429
       Asian |  (omitted)
       Black |   6.065295   4.799316     2.28   0.023     1.286227    28.60134
      Latino |   .2948143   .3264385    -1.10   0.270     .0336543    2.582599
       Other |   1.255943   1.843037     0.16   0.877     .0707737    22.28783
   AsianMale |  (omitted)
   BlackMale |   4.87e-08    .000095    -0.01   0.993            0           .
  LatinoMale |    4.89525   6.135177     1.27   0.205      .419731    57.09246
   OtherMale |  (omitted)
------------------------------------------------------------------------------
```

```
---------->  region = 4

Iteration 0:   log likelihood =  -4266.707
Iteration 1:   log likelihood = -4006.6008
Iteration 2:   log likelihood = -3995.9817
Iteration 3:   log likelihood = -3995.5998
Iteration 4:   log likelihood = -3995.5319
Iteration 5:   log likelihood =  -3995.517
Iteration 6:   log likelihood = -3995.5135
Iteration 7:   log likelihood = -3995.5127
Iteration 8:   log likelihood = -3995.5126
Iteration 9:   log likelihood = -3995.5125
Iteration 10:  log likelihood = -3995.5125

Multinomial logistic regression                 Number of obs   =       4159
                                                LR chi2(36)     =     542.39
                                                Prob > chi2     =     0.0000
Log likelihood = -3995.5125                     Pseudo R2       =     0.0636

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.004385   .0062146     0.71   0.479     .9922783     1.01664
       exper |   1.033146   .0091941     3.66   0.000     1.015283    1.051325
pyperstudlep |   1.006427    .004681     1.38   0.168     .9972944    1.015644
pyperstude~s |   .9971307    .002432    -1.18   0.239     .9923753    1.001909
pyperstudw~e |   .9896475   .0070933    -1.45   0.147     .9758421    1.003648
pyperstudb~k |   .9836686   .0075875    -2.13   0.033     .9689092    .9986528
pyperstudl~o |   .9904551   .0072234    -1.32   0.188     .9763981    1.004714
pyperstudm~e |    .995017   .0034089    -1.46   0.145      .988358    1.001721
        male |   1.311477   .1261842     2.82   0.005     1.086081    1.583651
         age |    .950029    .007205    -6.76   0.000      .936012     .964256
       Asian |   .9818388   .7049605    -0.03   0.980     .2403683    4.010543
       Black |   .9216643   .1163771    -0.65   0.518     .7196028    1.180464
      Latino |   1.140118   .2145348     0.70   0.486     .7884613    1.648616
       Other |   .4059171    .319174    -1.15   0.252      .086923    1.895571
   AsianMale |   2.27e-07   .0002377    -0.01   0.988            0           .
   BlackMale |   1.802346   .3311927     3.21   0.001     1.257258    2.583758
  LatinoMale |   1.646061   .4899195     1.67   0.094     .9185478    2.949785
   OtherMale |   8.06e-07    .001014    -0.01   0.991            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.033379   .0069087     4.91   0.000     1.019926    1.047008
       exper |    1.07917   .0114805     7.16   0.000     1.056901    1.101907
pyperstudlep |   1.014023    .005416     2.61   0.009     1.003463    1.024694
pyperstude~s |   1.022266   .0032514     6.92   0.000     1.015913    1.028658
pyperstudw~e |   1.007845   .0090104     0.87   0.382     .9903385     1.02566
pyperstudb~k |   .9895781   .0098271    -1.05   0.291     .9705036    1.009027
pyperstudl~o |   .9795357   .0091439    -2.21   0.027     .9617769    .9976224
pyperstudm~e |   .9921181   .0043142    -1.82   0.069     .9836983     1.00061
        male |   1.311692   .1417237     2.51   0.012     1.061359    1.621068
         age |   .9650314   .0088644    -3.88   0.000     .9478129    .9825626
       Asian |   .3298363   .3664826    -1.00   0.318     .0373701    2.911201
       Black |   .5201144   .0821976    -4.14   0.000     .3815725    .7089583
      Latino |   2.071667   .3944167     3.83   0.000     1.426472    3.008687
       Other |   .7489799   .5974203    -0.36   0.717     .1568604    3.576244
   AsianMale |   2.388301   3.315599     0.63   0.531      .157179    36.28973
   BlackMale |   1.551935   .3575678     1.91   0.056     .9879968    2.437763
  LatinoMale |   1.201091   .3873513     0.57   0.570     .6383576    2.259894
   OtherMale |   6.269779   7.339525     1.57   0.117     .6321488    62.18494
------------------------------------------------------------------------------


---------->  region = 5
```

```
note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -557.76471
Iteration 1:   log likelihood = -502.41296
Iteration 2:   log likelihood = -500.43671
Iteration 3:   log likelihood = -500.27708
Iteration 4:   log likelihood = -500.24937
Iteration 5:   log likelihood = -500.24318
Iteration 6:   log likelihood = -500.24169
Iteration 7:   log likelihood = -500.24138
Iteration 8:   log likelihood = -500.24131
Iteration 9:   log likelihood =  -500.2413

Multinomial logistic regression                 Number of obs   =        562
                                                LR chi2(30)     =     115.05
                                                Prob > chi2     =     0.0000
Log likelihood =  -500.2413                     Pseudo R2       =     0.1031

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.034183   .0185837     1.87   0.061     .9983937    1.071256
       exper |   .9902235   .0279885    -0.35   0.728     .9368588    1.046628
pyperstudlep |   .9586842   .0454867    -0.89   0.374     .8735516    1.052113
pyperstude~s |      1.008   .0093653     0.86   0.391       .98981    1.026523
pyperstudw~e |    .950045   .0379101    -1.28   0.199     .8785739     1.02733
pyperstudb~k |   .9444233    .039039    -1.38   0.167     .8709258    1.024123
pyperstudl~o |   .9709453   .0477701    -0.60   0.549     .8816902    1.069236
pyperstudm~e |   .9552851   .0271116    -1.61   0.107     .9035981    1.009929
        male |   2.971787   .8417638     3.85   0.000     1.705742    5.177523
         age |   .9601322   .0234247    -1.67   0.095     .9153011    1.007159
       Asian |  (omitted)
       Black |   1.901615   .7720166     1.58   0.113     .8581282    4.213984
      Latino |   3.999051   5.064563     1.09   0.274     .3341644     47.8579
       Other |   6.32e-07   .0010202    -0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |   .9240626   .5036561    -0.14   0.885     .3175104    2.689335
  LatinoMale |   .1664144   .2972678    -1.00   0.315     .0050197    5.516977
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.029916   .0160168     1.90   0.058     .9989974    1.061792
       exper |     1.0378   .0277115     1.39   0.165     .9848828    1.093559
pyperstudlep |   .9721948   .0408002    -0.67   0.502     .8954283    1.055543
pyperstude~s |   1.039847   .0090356     4.50   0.000     1.022287    1.057708
pyperstudw~e |   1.027131   .0432333     0.64   0.525     .9457962     1.11546
pyperstudb~k |   .9907105   .0431827    -0.21   0.830     .9095885    1.079067
pyperstudl~o |    1.03051   .0516267     0.60   0.549     .9341329    1.136831
pyperstudm~e |    1.02323   .0173859     1.35   0.177      .989715    1.057879
        male |   3.614709   .9781576     4.75   0.000     2.126836    6.143453
         age |   .9726164   .0236573    -1.14   0.254     .9273367    1.020107
       Asian |  (omitted)
       Black |   1.880066   .8020246     1.48   0.139     .8148088    4.338009
      Latino |   8.93e-06   .0067937    -0.02   0.988            0           .
       Other |   8.65e-07   .0012949    -0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |   .8765975   .4941951    -0.23   0.815     .2903504    2.646537
  LatinoMale |     .13021   140.8307    -0.00   0.998            0           .
   OtherMale |  (omitted)
------------------------------------------------------------------------------
```

```
---------->  region = 6

Iteration 0:   log likelihood = -705.09939
Iteration 1:   log likelihood = -652.43356
Iteration 2:   log likelihood = -650.85219
Iteration 3:   log likelihood = -650.57824
Iteration 4:   log likelihood = -650.51778
Iteration 5:   log likelihood = -650.50341
Iteration 6:   log likelihood = -650.50032
Iteration 7:   log likelihood = -650.49968
Iteration 8:   log likelihood = -650.49954
Iteration 9:   log likelihood =  -650.4995
Iteration 10:  log likelihood = -650.49949

Multinomial logistic regression                 Number of obs   =        679
                                                LR chi2(36)     =     109.20
                                                Prob > chi2     =     0.0000
Log likelihood = -650.49949                     Pseudo R2       =     0.0774

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9756316   .0155396    -1.55   0.121      .945645    1.006569
       exper |   1.013378   .0213001     0.63   0.527     .9724789    1.055997
pyperstudlep |   1.047861   .0249568     1.96   0.050      1.00007    1.097935
pyperstude~s |   .9991953   .0082245    -0.10   0.922     .9832048    1.015446
pyperstudw~e |   1.011065   .0637627     0.17   0.861     .8935074    1.144089
pyperstudb~k |   1.006248   .0652354     0.10   0.923     .8861788    1.142586
pyperstudl~o |    1.01889   .0640708     0.30   0.766     .9007441    1.152533
pyperstudm~e |   .9864187   .0140137    -0.96   0.336     .9593313    1.014271
        male |   2.035134   .4593622     3.15   0.002     1.307564    3.167545
         age |   .9725966   .0182093    -1.48   0.138     .9375538    1.008949
       Asian |   2.61e-07   .0009688    -0.00   0.997            0           .
       Black |   1.094853   .6821538     0.15   0.884     .3228571    3.712798
      Latino |    .308789   .3580958    -1.01   0.311     .0318084    2.997654
       Other |   2.92e-07   .0010828    -0.00   0.997            0           .
   AsianMale |   1.60e+13   6.56e+16     0.01   0.994            0           .
   BlackMale |   1.891867   1.543911     0.78   0.435     .3821584    9.365644
  LatinoMale |   2.906298   4.307952     0.72   0.472     .1590815    53.09586
   OtherMale |   1.296394   5618.281     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9979139   .0137127    -0.15   0.879     .9713963    1.025156
       exper |   1.075422   .0236159     3.31   0.001     1.030118    1.122719
pyperstudlep |   .9999667   .0240239    -0.00   0.999      .953972    1.048179
pyperstude~s |   1.036713   .0074856     4.99   0.000     1.022145    1.051489
pyperstudw~e |   .9247373   .0481695    -1.50   0.133     .8349864    1.024135
pyperstudb~k |   .9112786   .0484655    -1.75   0.081     .8210712    1.011397
pyperstudl~o |   .9149463   .0474161    -1.72   0.086     .8265764    1.012764
pyperstudm~e |   1.009348   .0114809     0.82   0.413     .9870949    1.032103
        male |   2.601721   .5493069     4.53   0.000     1.720064     3.93529
         age |    .957275   .0190447    -2.19   0.028     .9206664    .9953393
       Asian |   3.92e-07   .0012853    -0.00   0.996            0           .
       Black |   1.102708   .6588665     0.16   0.870      .341876    3.556742
      Latino |   4.11e-07   .0004803    -0.01   0.990            0           .
       Other |   3.05e-07   .0010002    -0.00   0.996            0           .
   AsianMale |   3.78e+12   1.41e+16     0.01   0.994            0           .
   BlackMale |   .4008795   .3531773    -1.04   0.299     .0713018    2.253863
  LatinoMale |    2450589   2.86e+09     0.01   0.990            0           .
   OtherMale |    3306585   1.08e+10     0.00   0.996            0           .
------------------------------------------------------------------------------


---------->  region = 7
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1006.8005
Iteration 1:   log likelihood = -914.91684
Iteration 2:   log likelihood = -909.44877
Iteration 3:   log likelihood = -909.32746
Iteration 4:   log likelihood = -909.30399
Iteration 5:   log likelihood = -909.30021
Iteration 6:   log likelihood =  -909.2998
Iteration 7:   log likelihood = -909.29971
Iteration 8:   log likelihood = -909.29969

Multinomial logistic regression                 Number of obs   =       1055
                                                LR chi2(34)     =     195.00
                                                Prob > chi2     =     0.0000
Log likelihood = -909.29969                     Pseudo R2       =     0.0968

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.009498   .0151162     0.63   0.528     .9803014    1.039565
       exper |   .9851564   .0181004    -0.81   0.416     .9503115    1.021279
pyperstudlep |   .9995332   .0274163    -0.02   0.986     .9472172    1.054739
pyperstude~s |   .9905121   .0076629    -1.23   0.218     .9756064    1.005646
pyperstudw~e |   .8853319   .1137046    -0.95   0.343     .6883113    1.138747
pyperstudb~k |   .8887553   .1145568    -0.91   0.360     .6903446    1.144191
pyperstudl~o |   .9026237   .1177598    -0.79   0.432     .6989655    1.165622
pyperstudm~e |   .9678459   .0156056    -2.03   0.043     .9377377    .9989208
        male |   2.604791   .6074775     4.11   0.000     1.649147    4.114208
         age |   .9847952   .0160985    -0.94   0.349     .9537427    1.016859
       Asian |   1.75e+08   6.95e+11     0.00   0.996            0           .
       Black |   2.086132   .7879802     1.95   0.052     .9950003    4.373813
      Latino |   .8896882   1.011378    -0.10   0.918     .0958541    8.257812
       Other |   5.33e-06   .0044222    -0.01   0.988            0           .
   AsianMale |  (omitted)
   BlackMale |   1.967093   1.032976     1.29   0.198     .7028054    5.505729
  LatinoMale |   3.787934   5.800632     0.87   0.384     .1883299    76.18778
   OtherMale |   928239.8   7.71e+08     0.02   0.987            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9871173   .0104469    -1.23   0.221     .9668527    1.007807
       exper |   1.078081   .0165481     4.90   0.000      1.04613    1.111007
pyperstudlep |   1.011084   .0226482     0.49   0.623     .9676542    1.056462
pyperstude~s |   1.047125   .0063091     7.64   0.000     1.034832    1.059564
pyperstudw~e |   .8987077   .1003131    -0.96   0.339     .7221176    1.118482
pyperstudb~k |     .87273   .0978465    -1.21   0.225     .7005629    1.087208
pyperstudl~o |   .8674097   .0987886    -1.25   0.212     .6938756    1.084344
pyperstudm~e |   .9959592   .0097591    -0.41   0.679     .9770142    1.015272
        male |   1.878691   .3172436     3.73   0.000     1.349329    2.615729
         age |   .9582194   .0138494    -2.95   0.003      .931456    .9857517
       Asian |   2.585764   17586.25     0.00   1.000            0           .
       Black |   .6289369   .2196888    -1.33   0.184     .3171617    1.247192
      Latino |   .2424903   .2699619    -1.27   0.203     .0273565    2.149454
       Other |   5.47e-06   .0030861    -0.02   0.983            0           .
   AsianMale |  (omitted)
   BlackMale |   3.896561   1.944898     2.72   0.006      1.46494    10.36438
  LatinoMale |   2.523013   4.238187     0.55   0.582     .0937694    67.88564
   OtherMale |   449819.7   2.54e+08     0.02   0.982            0           .
------------------------------------------------------------------------------


---------->  region = 8

note: AsianMale omitted because of collinearity
```

```
note: LatinoMale omitted because of collinearity
Iteration 0:   log likelihood = -304.76324
Iteration 1:   log likelihood = -277.65791
Iteration 2:   log likelihood = -276.24136
Iteration 3:   log likelihood =  -276.0533
Iteration 4:   log likelihood =  -276.0237
Iteration 5:   log likelihood = -276.02055
Iteration 6:   log likelihood =  -276.0199
Iteration 7:   log likelihood = -276.01977
Iteration 8:   log likelihood = -276.01974
Iteration 9:   log likelihood = -276.01973

Multinomial logistic regression                 Number of obs   =        316
                                                LR chi2(32)     =      57.49
                                                Prob > chi2     =     0.0037
Log likelihood = -276.01973                     Pseudo R2       =     0.0943

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.028235   .0283293     1.01   0.312     .9741836    1.085286
       exper |    1.00839   .0471108     0.18   0.858     .9201558    1.105085
pyperstudlep |   .9683541   .0726301    -0.43   0.668     .8359705    1.121702
pyperstude~s |   1.001769   .0161792     0.11   0.913     .9705555    1.033987
pyperstudw~e |   .8633224   .2064919    -0.61   0.539     .5402319     1.37964
pyperstudb~k |   .8719675   .2095276    -0.57   0.569     .5444558     1.39649
pyperstudl~o |   .8694181   .2154577    -0.56   0.572     .5349157    1.413097
pyperstudm~e |   .9857303   .0289365    -0.49   0.624     .9306166    1.044108
        male |   2.673866   1.182022     2.22   0.026     1.124225    6.359541
         age |   .9629171   .0389478    -0.93   0.350     .8895283    1.042361
       Asian |   7.43e+08   1.11e+13     0.00   0.999            0           .
       Black |   6.077569   4.842559     2.26   0.024     1.274968     28.9708
      Latino |   9.52e-07   .0022308    -0.01   0.995            0           .
       Other |   5.53e-07   .0011167    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   .4580874     .49522    -0.72   0.470     .0550489     3.81196
  LatinoMale |  (omitted)
   OtherMale |   .8862597   2554.831    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9788113   .0176874    -1.19   0.236     .9447514    1.014099
       exper |   1.090656   .0342801     2.76   0.006     1.025496    1.159956
pyperstudlep |    1.03849   .0539464     0.73   0.467     .9379615    1.149793
pyperstude~s |    1.03265   .0109354     3.03   0.002     1.011437    1.054307
pyperstudw~e |   .9602943   .1808688    -0.22   0.830     .6638698    1.389075
pyperstudb~k |   .9400511   .1776113    -0.33   0.744     .6491233    1.361369
pyperstudl~o |   .9155905    .178442    -0.45   0.651     .6248967    1.341511
pyperstudm~e |   1.024839    .013961     1.80   0.072     .9978383    1.052571
        male |    2.12499   .6107185     2.62   0.009     1.209826    3.732422
         age |   .9602578   .0264719    -1.47   0.141     .9097507    1.013569
       Asian |   .9427015   22477.25    -0.00   1.000            0           .
       Black |   1.760721   1.333892     0.75   0.455     .3988732    7.772239
      Latino |   3.65e-07    .000554    -0.01   0.992            0           .
       Other |   7.92e-07   .0009773    -0.01   0.991            0           .
   AsianMale |  (omitted)
   BlackMale |   .9508013   .9641577    -0.05   0.960      .130296    6.938228
  LatinoMale |  (omitted)
   OtherMale |    1603080   1.98e+09     0.01   0.991            0           .
------------------------------------------------------------------------------


---------->  region = 9

note: Asian omitted because of collinearity
```

```
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -201.36799
Iteration 1:   log likelihood = -175.09499
Iteration 2:   log likelihood = -172.50087
Iteration 3:   log likelihood = -172.22861
Iteration 4:   log likelihood = -172.18774
Iteration 5:   log likelihood = -172.17828
Iteration 6:   log likelihood = -172.17599
Iteration 7:   log likelihood = -172.17554
Iteration 8:   log likelihood = -172.17546
Iteration 9:   log likelihood = -172.17545
Iteration 10:  log likelihood = -172.17544

Multinomial logistic regression                 Number of obs   =        209
                                                LR chi2(30)     =      58.39
                                                Prob > chi2     =     0.0014
Log likelihood = -172.17544                     Pseudo R2       =     0.1450

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.022508   .0448425     0.51   0.612     .9382895    1.114285
       exper |   .9584199   .0595943    -0.68   0.495      .848454    1.082638
pyperstudlep |   .8870846   .1991861    -0.53   0.594      .571263    1.377507
pyperstude~s |   .9679303   .0240385    -1.31   0.189     .9219439     1.01621
pyperstudw~e |   1.110388   .2169995     0.54   0.592     .7570544    1.628629
pyperstudb~k |   1.200609    .258328     0.85   0.395      .787505    1.830415
pyperstudl~o |   1.109106   .2258198     0.51   0.611     .7441562    1.653036
pyperstudm~e |   .9756897   .0414935    -0.58   0.563      .897661    1.060501
        male |   3.127398   1.923206     1.85   0.064     .9369864    10.43838
         age |   .9467871   .0429588    -1.21   0.228     .8662246    1.034842
       Asian |  (omitted)
       Black |   39.29414   58.72593     2.46   0.014     2.099853    735.3036
      Latino |   343.3032    2119765     0.00   0.999            0           .
       Other |   1.43e+09   5.38e+13     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   4.45e-09   .0000136    -0.01   0.995            0           .
  LatinoMale |   5.49e-10   3.73e-06    -0.00   0.997            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9879643   .0221868    -0.54   0.590     .9454221    1.032421
       exper |    1.08775   .0400942     2.28   0.022     1.011938    1.169241
pyperstudlep |   1.002908   .0775484     0.04   0.970     .8618727    1.167022
pyperstude~s |   1.026952   .0141913     1.92   0.054     .9995109    1.055147
pyperstudw~e |   1.158822    .142852     1.20   0.232     .9100938    1.475528
pyperstudb~k |   1.169332   .1585465     1.15   0.249     .8964493    1.525281
pyperstudl~o |    1.14633   .1421234     1.10   0.271     .8990354    1.461648
pyperstudm~e |   1.023196   .0246674     0.95   0.342     .9759734    1.072704
        male |   2.864527   .9872494     3.05   0.002     1.457771     5.62881
         age |   .9606868   .0297736    -1.29   0.196     .9040685    1.020851
       Asian |  (omitted)
       Black |   2.183511   2.924682     0.58   0.560     .1581327    30.15011
      Latino |    4493341   1.24e+10     0.01   0.996            0           .
       Other |   2.242403   119054.6     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   6.88e-08   .0001089    -0.01   0.992            0           .
  LatinoMale |   1.52e-07   .0004188    -0.01   0.995            0           .
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 10
```

```
Iteration 0:   log likelihood = -2813.0248
Iteration 1:   log likelihood = -2656.9782
Iteration 2:   log likelihood = -2654.1581
Iteration 3:   log likelihood = -2654.1424
Iteration 4:   log likelihood = -2654.1423

Multinomial logistic regression                 Number of obs   =       2693
                                                LR chi2(36)     =     317.76
                                                Prob > chi2     =     0.0000
Log likelihood = -2654.1423                     Pseudo R2       =     0.0565

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.005076   .0075806     0.67   0.502     .9903275    1.020044
       exper |   1.025306   .0109746     2.33   0.020      1.00402    1.047043
pyperstudlep |    .998781   .0069273    -0.18   0.860     .9852956    1.012451
pyperstude~s |   .9947497   .0035268    -1.48   0.138     .9878612    1.001686
pyperstudw~e |   .9926796   .0121375    -0.60   0.548     .9691733    1.016756
pyperstudb~k |   .9955678   .0122602    -0.36   0.718     .9718258     1.01989
pyperstudl~o |   .9989584   .0123336    -0.08   0.933      .975075    1.023427
pyperstudm~e |    .994576   .0055658    -0.97   0.331     .9837268    1.005545
        male |   1.668313     .19918     4.29   0.000     1.320239    2.108155
         age |   .9647821    .008821    -3.92   0.000     .9476473    .9822267
       Asian |   .4462935   .4811491    -0.75   0.454     .0539436    3.692335
       Black |   2.134556   .3794066     4.27   0.000     1.506645    3.024157
      Latino |   2.814039   .7053549     4.13   0.000     1.721756    4.599267
       Other |   .2153163   .2238536    -1.48   0.140     .0280624    1.652072
   AsianMale |   2.337175   2.913682     0.68   0.496     .2030137     26.9065
   BlackMale |   1.027469   .2676782     0.10   0.917     .6166124    1.712086
  LatinoMale |    .763369   .2824746    -0.73   0.466     .3696227     1.57656
   OtherMale |   4.091924   5.125501     1.12   0.261     .3513352    47.65776
-------------+----------------------------------------------------------------
3            |
      tenure |   1.012482   .0071475     1.76   0.079     .9985695    1.026588
       exper |   1.080697    .012409     6.76   0.000     1.056647    1.105294
pyperstudlep |   1.009032   .0075002     1.21   0.226     .9944382     1.02384
pyperstude~s |   1.019831   .0037371     5.36   0.000     1.012533    1.027182
pyperstudw~e |   1.023741   .0129134     1.86   0.063     .9987416    1.049366
pyperstudb~k |   1.004758   .0130701     0.36   0.715      .979465    1.030705
pyperstudl~o |   .9933468   .0129641    -0.51   0.609     .9682598    1.019084
pyperstudm~e |   .9896342   .0064185    -1.61   0.108     .9771338    1.002295
        male |   1.505059   .1763349     3.49   0.000     1.196259     1.89357
         age |   .9653909   .0096578    -3.52   0.000     .9466463    .9845066
       Asian |   .5993798   .4352468    -0.70   0.481     .1444082    2.487782
       Black |   1.241586   .2461524     1.09   0.275     .8418226    1.831188
      Latino |   2.368346   .6289874     3.25   0.001     1.407286    3.985731
       Other |   .1712219    .180406    -1.67   0.094      .021712    1.350262
   AsianMale |   4.236418   3.726666     1.64   0.101     .7554733    23.75628
   BlackMale |   1.303114   .3833986     0.90   0.368     .7320557     2.31964
  LatinoMale |   1.069817   .4250123     0.17   0.865      .491075    2.330619
   OtherMale |   8.454405   10.51308     1.72   0.086     .7389429    96.72868
------------------------------------------------------------------------------


---------->  region = 11

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1977.4489
Iteration 1:   log likelihood = -1837.2682
Iteration 2:   log likelihood = -1835.4796
Iteration 3:   log likelihood =  -1835.401
Iteration 4:   log likelihood = -1835.3929
```

```
Iteration 5:   log likelihood = -1835.3916
Iteration 6:   log likelihood = -1835.3914
Iteration 7:   log likelihood = -1835.3914
Iteration 8:   log likelihood = -1835.3914

Multinomial logistic regression                 Number of obs   =       1845
                                                LR chi2(34)     =     284.12
                                                Prob > chi2     =     0.0000
Log likelihood = -1835.3914                     Pseudo R2       =     0.0718

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9687325    .009469    -3.25   0.001     .9503503    .9874703
       exper |   .9529673   .0094896    -4.84   0.000     .9345484    .9717491
pyperstudlep |   1.009129   .0125623     0.73   0.465     .9848054    1.034054
pyperstude~s |   1.001839   .0042753     0.43   0.667     .9934943    1.010254
pyperstudw~e |   .9520044   .0173308    -2.70   0.007     .9186355    .9865854
pyperstudb~k |   .9436113   .0178325    -3.07   0.002     .9092996    .9792177
pyperstudl~o |    .936842   .0171689    -3.56   0.000     .9037888     .971104
pyperstudm~e |   .9931315   .0051455    -1.33   0.183     .9830975    1.003268
        male |   1.032735   .1374963     0.24   0.809     .7955393    1.340652
         age |    1.02554   .0087976     2.94   0.003     1.008441    1.042929
       Asian |   .4714733   .5416448    -0.65   0.513     .0496098     4.48071
       Black |   1.593844   .4554876     1.63   0.103     .9103118    2.790626
      Latino |   2.148287   .7287548     2.25   0.024      1.10495    4.176784
       Other |   .8317962   .7320002    -0.21   0.834     .1482312    4.667607
   AsianMale |  (omitted)
   BlackMale |   1.807567   .7431295     1.44   0.150     .8075091    4.046146
  LatinoMale |   .5951615   .2991772    -1.03   0.302     .2222035    1.594112
   OtherMale |   2.21e-06   .0014913    -0.02   0.985            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9887492   .0088985    -1.26   0.209     .9714614    1.006345
       exper |   .9684241   .0096896    -3.21   0.001     .9496178    .9876028
pyperstudlep |   1.020073   .0134123     1.51   0.131     .9941217    1.046703
pyperstude~s |   1.030962   .0043982     7.15   0.000     1.022378    1.039619
pyperstudw~e |   1.036865   .0205199     1.83   0.067     .9974167    1.077873
pyperstudb~k |   1.002662   .0206478     0.13   0.897     .9629987    1.043959
pyperstudl~o |    .987108   .0200036    -0.64   0.522       .94867    1.027103
pyperstudm~e |   .9964854   .0054801    -0.64   0.522     .9858023    1.007284
        male |   1.527867   .1993507     3.25   0.001     1.183106    1.973091
         age |   1.062613   .0096426     6.69   0.000     1.043881    1.081681
       Asian |   .8150737   .9268982    -0.18   0.857     .0877433    7.571459
       Black |   2.840248    .847936     3.50   0.000     1.582108      5.0989
      Latino |   2.709875   .9954034     2.71   0.007     1.319113    5.566938
       Other |   .5059867   .5736236    -0.60   0.548     .0548472    4.667921
   AsianMale |  (omitted)
   BlackMale |   .5247994   .2498638    -1.35   0.176     .2064074    1.334324
  LatinoMale |   .5952181   .3186329    -0.97   0.332     .2084538    1.699583
   OtherMale |   .8230852   1.381834    -0.12   0.908     .0306484    22.10453
------------------------------------------------------------------------------


---------->  region = 12

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -774.53178
Iteration 1:   log likelihood = -714.00865
Iteration 2:   log likelihood = -711.77751
Iteration 3:   log likelihood = -711.67735
Iteration 4:   log likelihood = -711.66293
Iteration 5:   log likelihood = -711.66126
```

```
Iteration 6:   log likelihood = -711.66092
Iteration 7:   log likelihood = -711.66085
Iteration 8:   log likelihood = -711.66083

Multinomial logistic regression                 Number of obs   =        753
                                                LR chi2(32)     =     125.74
                                                Prob > chi2     =     0.0000
Log likelihood = -711.66083                     Pseudo R2       =     0.0812

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9982037   .0157033    -0.11   0.909     .9678955    1.029461
       exper |   .9953196   .0216493    -0.22   0.829     .9537795    1.038669
pyperstudlep |   1.023106   .0264513     0.88   0.377     .9725539    1.076285
pyperstude~s |   .9992262    .008075    -0.10   0.924     .9835242    1.015179
pyperstudw~e |   .8304908   .0453308    -3.40   0.001     .7462314    .9242641
pyperstudb~k |   .8356586   .0501691    -2.99   0.003     .7428937    .9400071
pyperstudl~o |   .8410294   .0475471    -3.06   0.002     .7528163     .939579
pyperstudm~e |   1.003862   .0083394     0.46   0.643      .987649     1.02034
        male |   1.147559   .2651324     0.60   0.551     .7296473    1.804832
         age |   .9671603   .0178386    -1.81   0.070     .9328217    1.002763
       Asian |  (omitted)
       Black |   1.272525   .5316491     0.58   0.564     .5611028    2.885961
      Latino |   2.664955   2.120101     1.23   0.218     .5604252     12.6725
       Other |   3.92e-06   .0029024    -0.02   0.987            0           .
   AsianMale |  (omitted)
   BlackMale |     2.6293   1.638469     1.55   0.121      .775188    8.918118
  LatinoMale |   .9498029   1.179618    -0.04   0.967     .0832673    10.83409
   OtherMale |   .2518175   435.4811    -0.00   0.999            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.016307   .0126011     1.30   0.192     .9919066    1.041307
       exper |   1.048678   .0200029     2.49   0.013     1.010197    1.088625
pyperstudlep |   1.010421   .0230402     0.45   0.649     .9662569    1.056603
pyperstude~s |   1.029469   .0071107     4.20   0.000     1.015626    1.043501
pyperstudw~e |   .9409725   .0534048    -1.07   0.284     .8419128    1.051688
pyperstudb~k |   .9171448   .0552073    -1.44   0.151     .8150796    1.031991
pyperstudl~o |    .927749   .0538263    -1.29   0.196     .8280286    1.039479
pyperstudm~e |    .988409   .0093288    -1.24   0.217     .9702929    1.006863
        male |   1.941811   .3793307     3.40   0.001     1.324115    2.847661
         age |    .975551   .0163584    -1.48   0.140     .9440102    1.008146
       Asian |  (omitted)
       Black |   1.537218    .633991     1.04   0.297      .684978    3.449804
      Latino |   1.721067   1.619867     0.58   0.564     .2720493      10.888
       Other |   1.681656   2.259707     0.39   0.699      .120766    23.41692
   AsianMale |  (omitted)
   BlackMale |   .9032034   .5621021    -0.16   0.870     .2667144    3.058614
  LatinoMale |   1.527573   1.971637     0.33   0.743     .1217187    19.17109
   OtherMale |   9.60e-07   .0011966    -0.01   0.991            0           .
------------------------------------------------------------------------------


---------->  region = 13

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1171.4552
Iteration 1:   log likelihood = -1100.0925
Iteration 2:   log likelihood =  -1098.406
Iteration 3:   log likelihood = -1098.2171
Iteration 4:   log likelihood = -1098.1857
Iteration 5:   log likelihood = -1098.1787
Iteration 6:   log likelihood =  -1098.177
Iteration 7:   log likelihood = -1098.1766
```

```
Iteration 8:   log likelihood = -1098.1765
Iteration 9:   log likelihood = -1098.1765

Multinomial logistic regression                 Number of obs   =       1087
                                                LR chi2(34)     =     146.56
                                                Prob > chi2     =     0.0000
Log likelihood = -1098.1765                     Pseudo R2       =     0.0626

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.028591    .012249     2.37   0.018     1.004861    1.052881
       exper |    .992192   .0159719    -0.49   0.626     .9613764    1.023995
pyperstudlep |   .9722848    .016232    -1.68   0.092     .9409855    1.004625
pyperstude~s |   .9930732   .0071088    -0.97   0.332     .9792375    1.007104
pyperstudw~e |   .9502763   .0305956    -1.58   0.113     .8921628    1.012175
pyperstudb~k |   .9755427   .0333725    -0.72   0.469     .9122785    1.043194
pyperstudl~o |   .9678923   .0301889    -1.05   0.295     .9104954    1.028907
pyperstudm~e |   .9855664   .0075979    -1.89   0.059     .9707867    1.000571
        male |   1.290501   .2266939     1.45   0.147     .9146044    1.820889
         age |   .9685326   .0139157    -2.23   0.026     .9416387    .9961946
       Asian |   2.41e-07   .0004794    -0.01   0.994            0           .
       Black |   1.883032   .6684434     1.78   0.075     .9390656     3.77589
      Latino |    1.22333   .3619708     0.68   0.496     .6849862    2.184768
       Other |   4.88e-07   .0004933    -0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |   1.587106    1.04887     0.70   0.485     .4345829    5.796142
  LatinoMale |   2.657005   1.253405     2.07   0.038     1.054023    6.697839
   OtherMale |    2745403   2.77e+09     0.01   0.988            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9962357    .011325    -0.33   0.740     .9742845    1.018682
       exper |   1.081152   .0185794     4.54   0.000     1.045343    1.118187
pyperstudlep |   .9729647   .0167946    -1.59   0.112     .9405984    1.006445
pyperstude~s |   1.026825   .0074773     3.64   0.000     1.012274    1.041585
pyperstudw~e |   .9915365   .0339959    -0.25   0.804     .9270952    1.060457
pyperstudb~k |   .9805413    .036152    -0.53   0.594     .9121842    1.054021
pyperstudl~o |   .9824805   .0329306    -0.53   0.598      .920012    1.049191
pyperstudm~e |   .9786688   .0091024    -2.32   0.020       .96099    .9966728
        male |   1.365481   .2341383     1.82   0.069     .9757317    1.910912
         age |   .9634969   .0150476    -2.38   0.017      .934451    .9934456
       Asian |   9.31e-07   .0018871    -0.01   0.995            0           .
       Black |   .9028162   .4078984    -0.23   0.821     .3724095    2.188658
      Latino |   .8664457   .2757741    -0.45   0.652     .4643219    1.616827
       Other |   3.61e-07   .0004211    -0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   4.339861   3.120767     2.04   0.041     1.060187    17.76517
  LatinoMale |   1.628333   .8667549     0.92   0.360     .5736566    4.622046
   OtherMale |   6.546375   10684.72     0.00   0.999            0           .
------------------------------------------------------------------------------


---------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -279.48608
Iteration 1:   log likelihood = -244.66801
Iteration 2:   log likelihood = -241.91258
Iteration 3:   log likelihood = -241.70434
Iteration 4:   log likelihood = -241.66036
Iteration 5:   log likelihood = -241.64964
Iteration 6:   log likelihood = -241.64742
Iteration 7:   log likelihood = -241.64695
```

```
Iteration 8:   log likelihood = -241.64684
Iteration 9:   log likelihood = -241.64681
Iteration 10:  log likelihood = -241.64681

Multinomial logistic regression                 Number of obs   =        290
                                                LR chi2(32)     =      75.68
                                                Prob > chi2     =     0.0000
Log likelihood = -241.64681                     Pseudo R2       =     0.1354

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9740233    .028796    -0.89   0.373     .9191882     1.03213
       exper |   1.002037   .0487597     0.04   0.967      .910886     1.10231
pyperstudlep |   .8997001   .1209395    -0.79   0.432     .6913175    1.170895
pyperstude~s |   .9782323   .0172508    -1.25   0.212     .9449991    1.012634
pyperstudw~e |   .8390204   .1908299    -0.77   0.440     .5372446    1.310307
pyperstudb~k |   .9024042   .2300458    -0.40   0.687     .5475302    1.487285
pyperstudl~o |   .8750362   .1918461    -0.61   0.543     .5693844    1.344765
pyperstudm~e |   .9758324   .0330043    -0.72   0.469     .9132427    1.042712
        male |    1.69253    .751389     1.19   0.236     .7090068    4.040382
         age |   .9865313   .0438606    -0.31   0.760      .904205    1.076353
       Asian |  (omitted)
       Black |   6.82e-07   .0021647    -0.00   0.996            0           .
      Latino |   3.992052   5.953731     0.93   0.353     .2146432    74.24634
       Other |   1.54e-06   .0047705    -0.00   0.997            0           .
   AsianMale |  (omitted)
   BlackMale |    1249321   7.62e+09     0.00   0.998            0           .
  LatinoMale |   .7072321   1.281595    -0.19   0.848     .0202804    24.66314
   OtherMale |   .6858386   3007.744    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9804444   .0187112    -1.03   0.301     .9444485    1.017812
       exper |    1.04835   .0340095     1.46   0.146     .9837677    1.117173
pyperstudlep |   1.211751   .0899809     2.59   0.010     1.047625     1.40159
pyperstude~s |   1.018269   .0111597     1.65   0.099     .9966301    1.040379
pyperstudw~e |   1.476809   .2614788     2.20   0.028     1.043791    2.089465
pyperstudb~k |   1.445419   .2867703     1.86   0.063     .9797511    2.132414
pyperstudl~o |   1.430433   .2487793     2.06   0.040     1.017249    2.011442
pyperstudm~e |   1.018139   .0213342     0.86   0.391     .9771721    1.060824
        male |   2.818055   .8579663     3.40   0.001     1.551666    5.118004
         age |   .9737285   .0300623    -0.86   0.389     .9165548    1.034469
       Asian |  (omitted)
       Black |   2.823268   4.740545     0.62   0.536     .1050754    75.85832
      Latino |   1.36e-07   .0002246    -0.01   0.992            0           .
       Other |   .9501805   1.447229    -0.03   0.973     .0480101    18.80526
   AsianMale |  (omitted)
   BlackMale |    3224497   7.27e+09     0.01   0.995            0           .
  LatinoMale |    5740876   9.46e+09     0.01   0.992            0           .
   OtherMale |   .9663667   2.102175    -0.02   0.987     .0135985    68.67416
------------------------------------------------------------------------------


---------->  region = 15

note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -303.11913
Iteration 1:   log likelihood = -264.80503
Iteration 2:   log likelihood = -262.59677
Iteration 3:   log likelihood = -262.53101
Iteration 4:   log likelihood = -262.51756
```

```
Iteration 5:   log likelihood = -262.51432
Iteration 6:   log likelihood = -262.51363
Iteration 7:   log likelihood = -262.51349
Iteration 8:   log likelihood = -262.51345
Iteration 9:   log likelihood = -262.51345

Multinomial logistic regression                 Number of obs   =        326
                                                LR chi2(28)     =      81.21
                                                Prob > chi2     =     0.0000
Log likelihood = -262.51345                     Pseudo R2       =     0.1340

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.019142   .0302314     0.64   0.523     .9615795    1.080151
       exper |   1.133216   .0708896     2.00   0.046     1.002455    1.281034
pyperstudlep |   .9910395   .0259406    -0.34   0.731     .9414791    1.043209
pyperstude~s |   .9950358   .0125283    -0.40   0.693     .9707813    1.019896
pyperstudw~e |   .7898824   .2212445    -0.84   0.400     .4561867    1.367673
pyperstudb~k |   .8140474   .2512793    -0.67   0.505     .4445306    1.490726
pyperstudl~o |   .8138749   .2271849    -0.74   0.461     .4709267    1.406572
pyperstudm~e |   1.026981   .0190616     1.43   0.151     .9902924    1.065029
        male |   1.380567    .667956     0.67   0.505      .534839    3.563625
         age |   .8872737   .0503891    -2.11   0.035     .7938109    .9917408
       Asian |   8.66e-07   .0021898    -0.01   0.996            0           .
       Black |   4.47e-07   .0011301    -0.01   0.995            0           .
      Latino |   .3190362   .2907191    -1.25   0.210     .0534798    1.903226
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   2.448793   2.504952     0.88   0.381      .329784    18.18338
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9998008   .0189948    -0.01   0.992     .9632562    1.037732
       exper |   1.058569   .0307473     1.96   0.050     .9999886    1.120581
pyperstudlep |   .9992997   .0196067    -0.04   0.972     .9616008    1.038477
pyperstude~s |   1.041141   .0092271     4.55   0.000     1.023213    1.059384
pyperstudw~e |   1.009179   .1730433     0.05   0.958      .721129    1.412287
pyperstudb~k |   .9489917   .1733808    -0.29   0.774     .6633579    1.357616
pyperstudl~o |   .9795658   .1673849    -0.12   0.904     .7007824    1.369254
pyperstudm~e |   1.012393   .0151381     0.82   0.410     .9831535    1.042502
        male |   2.751693   .8585839     3.24   0.001     1.492821     5.07215
         age |   .9784009   .0256979    -0.83   0.406     .9293084    1.030087
       Asian |   6.62e-06   .0089636    -0.01   0.993            0           .
       Black |   3.37e-06   .0045591    -0.01   0.993            0           .
      Latino |   .5552148   .3670441    -0.89   0.373     .1519653    2.028512
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   2.027378    1.52872     0.94   0.349     .4624837    8.887366
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 16

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -418.07322
Iteration 1:   log likelihood = -375.77776
Iteration 2:   log likelihood = -373.97576
Iteration 3:   log likelihood = -370.59624
Iteration 4:   log likelihood = -370.40905
Iteration 5:   log likelihood = -370.36469
```

```
Iteration 6:   log likelihood = -370.35475
Iteration 7:   log likelihood = -370.35241
Iteration 8:   log likelihood = -370.35192
Iteration 9:   log likelihood = -370.35184
Iteration 10:  log likelihood = -370.35183

Multinomial logistic regression                 Number of obs   =        402
                                                LR chi2(34)     =      95.44
                                                Prob > chi2     =     0.0000
Log likelihood = -370.35183                     Pseudo R2       =     0.1141

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.088206   .0307227     2.99   0.003     1.029626    1.150118
       exper |   .9462429   .0329046    -1.59   0.112     .8838999    1.012983
pyperstudlep |   .9688951   .0251967    -1.22   0.224     .9207479     1.01956
pyperstude~s |   .9792995   .0096078    -2.13   0.033     .9606485    .9983126
pyperstudw~e |   .9764366   .0335717    -0.69   0.488     .9128053    1.044503
pyperstudb~k |   .9938328   .0426834    -0.14   0.885     .9135991    1.081113
pyperstudl~o |   1.006481   .0337966     0.19   0.847     .9423732    1.074949
pyperstudm~e |    .998812   .0158971    -0.07   0.940     .9681353    1.030461
        male |   1.387883   .4605986     0.99   0.323     .7242086    2.659759
         age |   .9612197   .0277672    -1.37   0.171      .908309    1.017213
       Asian |   1.52e+08   2.00e+12     0.00   0.999            0           .
       Black |   .6360553    .626592    -0.46   0.646     .0922482    4.385631
      Latino |    1.96515    1.63004     0.81   0.415     .3866752    9.987228
       Other |   1.12e-07   .0003941    -0.00   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   .7463732   1.187717    -0.18   0.854     .0329932    16.88449
  LatinoMale |   2.953867   3.633539     0.88   0.379     .2650522    32.91929
   OtherMale |   1.443569    7660.23     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.041565   .0180084     2.36   0.019     1.006861    1.077466
       exper |   1.011056   .0231667     0.48   0.631     .9666548    1.057497
pyperstudlep |   1.015014   .0185192     0.82   0.414     .9793579    1.051967
pyperstude~s |   1.017012   .0070166     2.44   0.014     1.003352    1.030857
pyperstudw~e |   1.037022   .0387273     0.97   0.330     .9638292    1.115773
pyperstudb~k |   1.063951   .0482732     1.37   0.172      .973422    1.162899
pyperstudl~o |   1.022728   .0376921     0.61   0.542     .9514583    1.099337
pyperstudm~e |   .9954603   .0129846    -0.35   0.727     .9703335    1.021238
        male |   1.465532   .3654411     1.53   0.125     .8989635    2.389179
         age |   .9996491    .022226    -0.02   0.987     .9570225    1.044174
       Asian |   3.208747   61394.88     0.00   1.000            0           .
       Black |   1.04e-07   .0001219    -0.01   0.989            0           .
      Latino |   .6280363   .5920785    -0.49   0.622     .0989733    3.985211
       Other |   1.16e-07   .0003161    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   .8833065   1789.543    -0.00   1.000            0           .
  LatinoMale |   3.33e-08   .0001579    -0.00   0.997            0           .
   OtherMale |   .3348154   1245.304    -0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 17

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -419.82318
Iteration 1:   log likelihood = -379.73463
Iteration 2:   log likelihood = -376.97934
Iteration 3:   log likelihood = -376.72435
Iteration 4:   log likelihood = -376.66322
```

```
Iteration 5:   log likelihood = -376.65169
Iteration 6:   log likelihood = -376.64972
Iteration 7:   log likelihood = -376.64926
Iteration 8:   log likelihood = -376.64915
Iteration 9:   log likelihood = -376.64913

Multinomial logistic regression                 Number of obs   =        419
                                                LR chi2(32)     =      86.35
                                                Prob > chi2     =     0.0000
Log likelihood = -376.64913                     Pseudo R2       =     0.1028

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9456877   .0237495    -2.22   0.026     .9002666    .9934004
       exper |   1.055532   .0384032     1.49   0.137     .9828842     1.13355
pyperstudlep |   .9937187   .0458544    -0.14   0.891       .90779    1.087781
pyperstude~s |   .9945366   .0131162    -0.42   0.678     .9691587    1.020579
pyperstudw~e |   .6342248   .1042318    -2.77   0.006     .4595707     .875254
pyperstudb~k |    .652666   .1073642    -2.59   0.009     .4727891    .9009786
pyperstudl~o |   .6297899   .1033155    -2.82   0.005     .4566234    .8686267
pyperstudm~e |   1.008922   .0120985     0.74   0.459     .9854861    1.032916
        male |   2.315975   .8755742     2.22   0.026       1.1039      4.8589
         age |    .981093   .0322124    -0.58   0.561     .9199464    1.046304
       Asian |  (omitted)
       Black |   1.17e-06   .0014939    -0.01   0.991            0           .
      Latino |     .84451   1.015843    -0.14   0.888     .0799305    8.922713
       Other |   4.690592   23944.43     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |    3481476   4.44e+09     0.01   0.991            0           .
  LatinoMale |   2.996189   4.152967     0.79   0.429      .198031    45.33205
   OtherMale |   .1750277   1027.751    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9814091   .0164895    -1.12   0.264     .9496167    1.014266
       exper |   1.062367   .0281614     2.28   0.022     1.008581    1.119021
pyperstudlep |   1.031257   .0252518     1.26   0.209     .9829327    1.081956
pyperstude~s |   1.016037   .0102478     1.58   0.115      .996149    1.036322
pyperstudw~e |   .9955523   .1490939    -0.03   0.976     .7423149    1.335181
pyperstudb~k |   .9941918   .1494776    -0.04   0.969     .7404425    1.334901
pyperstudl~o |   .9891345   .1472852    -0.07   0.942     .7387692    1.324347
pyperstudm~e |   .9773519   .0121884    -1.84   0.066     .9537526    1.001535
        male |   2.241085   .5667422     3.19   0.001     1.365212    3.678887
         age |   .9882251   .0236254    -0.50   0.620     .9429883    1.035632
       Asian |  (omitted)
       Black |   3.623239    3.52182     1.32   0.185     .5391648    24.34851
      Latino |   .8517909   .6147464    -0.22   0.824     .2070198    3.504726
       Other |   1.10e+07   2.77e+10     0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   .2833399   .4875981    -0.73   0.464     .0097158    8.262961
  LatinoMale |   2.396282   2.195574     0.95   0.340     .3977695    14.43592
   OtherMale |   .6409003   1868.876    -0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 18

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -412.27681
Iteration 1:   log likelihood = -370.92401
Iteration 2:   log likelihood = -368.97098
Iteration 3:   log likelihood = -368.78665
Iteration 4:   log likelihood =  -368.7519
```

```
Iteration 5:   log likelihood =  -368.7445
Iteration 6:   log likelihood = -368.74284
Iteration 7:   log likelihood = -368.74243
Iteration 8:   log likelihood = -368.74235
Iteration 9:   log likelihood = -368.74233

Multinomial logistic regression                 Number of obs   =        409
                                                LR chi2(32)     =      87.07
                                                Prob > chi2     =     0.0000
Log likelihood = -368.74233                     Pseudo R2       =     0.1056

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9959411   .0244772    -0.17   0.869     .9491038     1.04509
       exper |   .9742495   .0349448    -0.73   0.467      .908111    1.045205
pyperstudlep |   .9753352   .0166973    -1.46   0.145      .943152    1.008617
pyperstude~s |   1.028345   .0138576     2.07   0.038      1.00154    1.055867
pyperstudw~e |   .9752117   .1825376    -0.13   0.893     .6757301    1.407423
pyperstudb~k |   .9870827   .1977499    -0.06   0.948     .6665393    1.461778
pyperstudl~o |   .9667311   .1816354    -0.18   0.857     .6689238    1.397123
pyperstudm~e |   1.035011   .0152087     2.34   0.019     1.005627    1.065252
        male |   1.506889   .5551646     1.11   0.266     .7319536    3.102266
         age |   .9662572   .0307872    -1.08   0.281     .9077609    1.028523
       Asian |  (omitted)
       Black |   3.269885   4.821494     0.80   0.422     .1817286    58.83581
      Latino |   2.002683   1.297224     1.07   0.284      .562668    7.128074
       Other |   1.01e-06   .0006365    -0.02   0.983            0           .
   AsianMale |  (omitted)
   BlackMale |   1.01e-06   .0007089    -0.02   0.984            0           .
  LatinoMale |   1.787763   1.407244     0.74   0.460     .3821942    8.362498
   OtherMale |   4.10e+13   1.96e+17     0.01   0.995            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9846617   .0156793    -0.97   0.332     .9544053    1.015877
       exper |   1.101202   .0317725     3.34   0.001     1.040657    1.165269
pyperstudlep |   .9732179   .0133906    -1.97   0.048     .9473235    .9998202
pyperstude~s |    1.05025   .0117535     4.38   0.000     1.027464    1.073541
pyperstudw~e |   1.089106   .1801602     0.52   0.606     .7875243    1.506177
pyperstudb~k |   1.050944   .1853929     0.28   0.778     .7437427    1.485036
pyperstudl~o |   1.060848   .1765426     0.35   0.723     .7655955    1.469966
pyperstudm~e |   .9826596   .0165075    -1.04   0.298     .9508323    1.015552
        male |    1.35594   .3692411     1.12   0.263     .7951456    2.312248
         age |   .9578168   .0254876    -1.62   0.105     .9091424    1.009097
       Asian |  (omitted)
       Black |   2.120477   2.677172     0.60   0.552     .1785516    25.18277
      Latino |   1.627977   .8533313     0.93   0.353     .5827423    4.547993
       Other |   2.822066   3.038534     0.96   0.335     .3420375    23.28416
   AsianMale |  (omitted)
   BlackMale |   .9799193   1.592179    -0.01   0.990     .0405651    23.67164
  LatinoMale |   .7757843    .523357    -0.38   0.707      .206779    2.910554
   OtherMale |   1.012259    7462.94     0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 19

Iteration 0:   log likelihood = -723.09524
Iteration 1:   log likelihood = -654.28046
Iteration 2:   log likelihood = -651.46108
Iteration 3:   log likelihood = -651.36115
Iteration 4:   log likelihood =  -651.3392
Iteration 5:   log likelihood = -651.33391
Iteration 6:   log likelihood = -651.33286
```

```
Iteration 7:   log likelihood = -651.33267
Iteration 8:   log likelihood = -651.33265

Multinomial logistic regression                 Number of obs   =        673
                                                LR chi2(36)     =     143.53
                                                Prob > chi2     =     0.0000
Log likelihood = -651.33265                     Pseudo R2       =     0.0992

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.036504   .0146326     2.54   0.011     1.008218    1.065584
       exper |   1.048084   .0209561     2.35   0.019     1.007805    1.089973
pyperstudlep |   1.015125   .0067075     2.27   0.023     1.002063    1.028357
pyperstude~s |   1.004585   .0082666     0.56   0.578     .9885131    1.020919
pyperstudw~e |   .8492294   .1175237    -1.18   0.238     .6474831    1.113837
pyperstudb~k |   .8246419   .1196824    -1.33   0.184     .6204808     1.09598
pyperstudl~o |   .8405426     .11291    -1.29   0.196     .6459784    1.093708
pyperstudm~e |   1.008333   .0085374     0.98   0.327     .9917381    1.025205
        male |     1.1224   .3074963     0.42   0.673     .6560694    1.920196
         age |   .9604666   .0162352    -2.39   0.017     .9291676    .9928199
       Asian |    2997468   4.49e+09     0.01   0.992            0           .
       Black |   .5326736   .3850461    -0.87   0.384     .1291711     2.19663
      Latino |   1.290617   .3445776     0.96   0.339     .7647822    2.177995
       Other |   1.83e-06   .0024978    -0.01   0.992            0           .
   AsianMale |   6.02e-07   .0014138    -0.01   0.995            0           .
   BlackMale |   1.098661   1.250309     0.08   0.934     .1180787    10.22248
  LatinoMale |   1.333177   .5096503     0.75   0.452     .6302148    2.820248
   OtherMale |    3249708   1.22e+10     0.00   0.997            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.049382   .0159259     3.18   0.001     1.018628    1.081065
       exper |   1.148935   .0311701     5.12   0.000     1.089438    1.211681
pyperstudlep |   1.006723   .0076196     0.89   0.376     .9918987    1.021768
pyperstude~s |   1.036362   .0108888     3.40   0.001     1.015239    1.057925
pyperstudw~e |    .979023   .1494401    -0.14   0.890     .7258781     1.32045
pyperstudb~k |   .9083508   .1456277    -0.60   0.549     .6634193     1.24371
pyperstudl~o |   .9345526   .1387809    -0.46   0.649     .6985548    1.250279
pyperstudm~e |    1.00478   .0108105     0.44   0.658     .9838132    1.026193
        male |   .7890777   .2564099    -0.73   0.466     .4173715    1.491821
         age |   .9264024   .0219751    -3.22   0.001     .8843178    .9704898
       Asian |   1.037476   2569.106     0.00   1.000            0           .
       Black |   .1515132   .1701895    -1.68   0.093      .016762    1.369542
      Latino |   1.084094   .3334118     0.26   0.793     .5933093    1.980857
       Other |   3.73e-06   .0059547    -0.01   0.994            0           .
   AsianMale |   4.46e+07   1.19e+11     0.01   0.995            0           .
   BlackMale |   7.562007   11.24099     1.36   0.174     .4105052    139.3014
  LatinoMale |   2.198678   .9832651     1.76   0.078     .9151621    5.282327
   OtherMale |   3.11e+13   8.75e+16     0.01   0.991            0           .
------------------------------------------------------------------------------


---------->  region = 20

Iteration 0:   log likelihood = -1927.4152
Iteration 1:   log likelihood = -1802.9933
Iteration 2:   log likelihood = -1796.3622
Iteration 3:   log likelihood = -1796.2469
Iteration 4:   log likelihood = -1796.2193
Iteration 5:   log likelihood = -1796.2137
Iteration 6:   log likelihood = -1796.2126
Iteration 7:   log likelihood = -1796.2123
Iteration 8:   log likelihood = -1796.2122
Iteration 9:   log likelihood = -1796.2122
```

```
Multinomial logistic regression                 Number of obs   =       1993
                                                LR chi2(36)     =     262.41
                                                Prob > chi2     =     0.0000
Log likelihood = -1796.2122                     Pseudo R2       =     0.0681

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.004313   .0090378     0.48   0.632     .9867545    1.022184
       exper |    1.00956   .0126407     0.76   0.447     .9850863    1.034642
pyperstudlep |    .983784    .006886    -2.34   0.020     .9703798    .9973734
pyperstude~s |    1.00536   .0053056     1.01   0.311     .9950153    1.015813
pyperstudw~e |   .9521029   .0479109    -0.98   0.329     .8626815    1.050793
pyperstudb~k |   .9538638   .0499014    -0.90   0.367      .860906    1.056859
pyperstudl~o |   .9474969   .0474942    -1.08   0.282     .8588365     1.04531
pyperstudm~e |   .9946301   .0055853    -0.96   0.338     .9837432    1.005637
        male |   1.774596   .2663196     3.82   0.000     1.322381    2.381454
         age |   .9734531   .0105435    -2.48   0.013     .9530061    .9943389
       Asian |   8.43e-07   .0009509    -0.01   0.990            0           .
       Black |   1.621511   .4952781     1.58   0.114     .8911013    2.950618
      Latino |   1.551801   .2807262     2.43   0.015     1.088556    2.212185
       Other |   1.680049   2.067925     0.42   0.673     .1505226    18.75176
   AsianMale |   3.16e+13   1.34e+17     0.01   0.994            0           .
   BlackMale |   .6161544    .290581    -1.03   0.305      .244489    1.552815
  LatinoMale |    .967844   .2443383    -0.13   0.897     .5900844    1.587437
   OtherMale |   .9806292   1.510206    -0.01   0.990     .0479316    20.06262
-------------+----------------------------------------------------------------
3            |
      tenure |   1.036078   .0097584     3.76   0.000     1.017127    1.055381
       exper |   1.101147   .0182456     5.82   0.000     1.065961    1.137495
pyperstudlep |   1.010082   .0061955     1.64   0.102     .9980123    1.022299
pyperstude~s |   1.050915   .0063963     8.16   0.000     1.038453    1.063527
pyperstudw~e |   1.094466   .0647399     1.53   0.127     .9746572    1.229002
pyperstudb~k |    1.03652   .0635617     0.58   0.559     .9191373    1.168895
pyperstudl~o |   1.036616   .0611113     0.61   0.542     .9235011    1.163586
pyperstudm~e |   1.007007   .0055382     1.27   0.204     .9962103     1.01792
        male |   1.436901   .2434199     2.14   0.032     1.030928    2.002745
         age |    .939649   .0133664    -4.38   0.000     .9138131    .9662153
       Asian |   1.519886   1.795189     0.35   0.723     .1501164    15.38842
       Black |   1.176661   .3851345     0.50   0.619     .6195034    2.234906
      Latino |   1.143607     .21675     0.71   0.479     .7887638    1.658084
       Other |   2.938933   3.676488     0.86   0.389     .2531456       34.12
   AsianMale |   .3654843   2977.105    -0.00   1.000            0           .
   BlackMale |   1.060586   .5327485     0.12   0.907     .3962551    2.838686
  LatinoMale |    1.05136   .2901462     0.18   0.856       .61213    1.805758
   OtherMale |   .4241828   .7322504    -0.50   0.619     .0143932    12.50114
------------------------------------------------------------------------------


---------> region = .

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -57.168138
Iteration 1:   log likelihood = -45.192669
Iteration 2:   log likelihood = -42.564244
Iteration 3:   log likelihood =  -41.83346
Iteration 4:   log likelihood = -41.746353
Iteration 5:   log likelihood = -41.728343
Iteration 6:   log likelihood = -41.724944
Iteration 7:   log likelihood = -41.724202
Iteration 8:   log likelihood = -41.724025
Iteration 9:   log likelihood = -41.723986
```

```
Iteration 10:  log likelihood = -41.723978
Iteration 11:  log likelihood = -41.723976

Multinomial logistic regression                 Number of obs   =         66
                                                LR chi2(32)     =      30.89
                                                Prob > chi2     =     0.5227
Log likelihood = -41.723976                     Pseudo R2       =     0.2702

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .8612892   .0776687    -1.66   0.098     .7217552    1.027799
       exper |   1.180217   .1584944     1.23   0.217     .9070929    1.535578
pyperstudlep |   .8650638   .1172361    -1.07   0.285     .6632706    1.128251
pyperstude~s |   1.016918   .0533139     0.32   0.749     .9176135    1.126968
pyperstudw~e |   .6015824   .2273304    -1.34   0.179      .286838    1.261692
pyperstudb~k |   .6037045   .2321092    -1.31   0.189     .2841573    1.282596
pyperstudl~o |   .6029982   .2336492    -1.31   0.192     .2821585    1.288661
pyperstudm~e |   .9984752   .0333865    -0.05   0.964     .9351369    1.066103
        male |   6.964683   12.91978     1.05   0.295     .1836061    264.1896
         age |    .891545   .1103981    -0.93   0.354     .6994245    1.136438
       Asian |   .0009329   5.992781    -0.00   0.999            0           .
       Black |   12.44361   29.53051     1.06   0.288     .1188282    1303.085
      Latino |   40.93658   100.6063     1.51   0.131     .3312741    5058.662
       Other |   5.56e-08   .0002488    -0.00   0.997            0           .
   AsianMale |  (omitted)
   BlackMale |   10.62339   42.80998     0.59   0.558     .0039455    28603.69
  LatinoMale |   .0496313   .1444623    -1.03   0.302     .0001653     14.9058
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.029143   .0547053     0.54   0.589     .9273192    1.142148
       exper |    1.04476   .0732588     0.62   0.532     .9106047    1.198679
pyperstudlep |   .9798021   .0454965    -0.44   0.660      .894568    1.073157
pyperstude~s |    1.01037   .0349028     0.30   0.765     .9442262    1.081147
pyperstudw~e |   1.115373   .2977904     0.41   0.683     .6609374    1.882262
pyperstudb~k |   1.095516   .2952931     0.34   0.735      .645922    1.858051
pyperstudl~o |    1.10487   .2943355     0.37   0.708     .6554697    1.862387
pyperstudm~e |   1.009012   .0235213     0.38   0.700     .9639485    1.056182
        male |    1.68902   1.433024     0.62   0.537     .3202175    8.908904
         age |   .9458714   .0576578    -0.91   0.361     .8393539    1.065906
       Asian |   3.53e-07   .0020692    -0.00   0.998            0           .
       Black |   1.93e-07   .0003485    -0.01   0.993            0           .
      Latino |    1.17882    2.33415     0.08   0.934     .0243223    57.13332
       Other |   1.29e-07   .0004588    -0.00   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   .2356184   1895.031    -0.00   1.000            0           .
  LatinoMale |    .336281   .7311403    -0.50   0.616     .0047427    23.84405
   OtherMale |  (omitted)
------------------------------------------------------------------------------

. bysort pyschooltype : mlogit admin  tenure exper  pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile male age
> Asian Black Latino Other AsianMale BlackMale LatinoMale OtherMale if validcert1997a==1,
rrr


---------->  pyschooltype =

Iteration 0:   log likelihood =  -443.4197
Iteration 1:   log likelihood = -413.03097
Iteration 2:   log likelihood = -412.07371
Iteration 3:   log likelihood = -411.90407
Iteration 4:   log likelihood = -411.88054
```

```
Iteration 5:   log likelihood = -411.87775
Iteration 6:   log likelihood = -411.87721
Iteration 7:   log likelihood = -411.87709
Iteration 8:   log likelihood = -411.87707
Iteration 9:   log likelihood = -411.87706

Multinomial logistic regression                 Number of obs   =        426
                                                LR chi2(36)     =      63.09
                                                Prob > chi2     =     0.0035
Log likelihood = -411.87706                     Pseudo R2       =     0.0711

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9575667   .0209752    -1.98   0.048     .9173262    .9995726
       exper |   1.054487   .0282074     1.98   0.047     1.000626    1.111248
pyperstudlep |   1.015179   .0122403     1.25   0.212     .9914696    1.039455
pyperstude~s |   .9949086   .0082151    -0.62   0.536     .9789369    1.011141
pyperstudw~e |   .9786776   .0324258    -0.65   0.515     .9171438     1.04434
pyperstudb~k |   .9825046   .0347982    -0.50   0.618     .9166149    1.053131
pyperstudl~o |   .9828116   .0325635    -0.52   0.601     .9210165    1.048753
pyperstudm~e |   .9956991   .0108922    -0.39   0.694     .9745781    1.017278
        male |   2.604397   .8678358     2.87   0.004     1.355409    5.004309
         age |   .9574429   .0227283    -1.83   0.067     .9139166    1.003042
       Asian |   4.93e-07   .0014006    -0.01   0.996            0           .
       Black |    2.39816   1.294543     1.62   0.105     .8325178    6.908164
      Latino |   1.431619   .8342184     0.62   0.538     .4569031    4.485707
       Other |   4.46e-07   .0008795    -0.01   0.994            0           .
   AsianMale |   .8429557   3388.292    -0.00   1.000            0           .
   BlackMale |   .6569313   .5559627    -0.50   0.620     .1250679    3.450596
  LatinoMale |   .3326928   .2517455    -1.45   0.146     .0755001    1.466019
   OtherMale |   1.013147   2616.016     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9968271   .0176077    -0.18   0.857     .9629073    1.031942
       exper |   1.071902   .0250003     2.98   0.003     1.024005    1.122039
pyperstudlep |   1.006765   .0121361     0.56   0.576      .983257    1.030834
pyperstude~s |   1.016663   .0080798     2.08   0.038     1.000949    1.032623
pyperstudw~e |   1.003894   .0345781     0.11   0.910     .9383592    1.074006
pyperstudb~k |   .9884411   .0367067    -0.31   0.754     .9190531    1.063068
pyperstudl~o |   .9856043   .0342725    -0.42   0.677     .9206693    1.055119
pyperstudm~e |   .9964643   .0115483    -0.31   0.760     .9740851    1.019358
        male |   2.247611   .6576712     2.77   0.006     1.266636    3.988324
         age |   .9790473   .0205348    -1.01   0.313     .9396159    1.020134
       Asian |   8.85e-07   .0020999    -0.01   0.995            0           .
       Black |   1.247762   .7133627     0.39   0.699     .4069001    3.826268
      Latino |   1.587287   .9195086     0.80   0.425     .5099856    4.940295
       Other |   2.96e-07   .0004963    -0.01   0.993            0           .
   AsianMale |   1.024268   3438.872     0.00   1.000            0           .
   BlackMale |   .9666466   .8638469    -0.04   0.970     .1677215    5.571174
  LatinoMale |   .9481033   .6256689    -0.08   0.936     .2600961     3.45603
   OtherMale |    2965767   4.98e+09     0.01   0.993            0           .
------------------------------------------------------------------------------
by pyschooltype


---------->  pyschooltype = Both Elem/Sec

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -643.61923
Iteration 1:   log likelihood = -584.72524
Iteration 2:   log likelihood = -578.17985
Iteration 3:   log likelihood = -578.02481
Iteration 4:   log likelihood = -578.00505
```

```
Iteration 5:   log likelihood =  -578.0017
Iteration 6:   log likelihood = -578.00093
Iteration 7:   log likelihood = -578.00075
Iteration 8:   log likelihood = -578.00071
Iteration 9:   log likelihood =  -578.0007

Multinomial logistic regression                 Number of obs   =        675
                                                LR chi2(34)     =     131.24
                                                Prob > chi2     =     0.0000
Log likelihood =  -578.0007                     Pseudo R2       =     0.1020

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.027861    .021277     1.33   0.184     .9869934    1.070421
       exper |   .9652542   .0253738    -1.35   0.179     .9167819    1.016289
pyperstudlep |   1.011565   .0154148     0.75   0.451     .9817991    1.042233
pyperstude~s |   .9860826   .0074487    -1.86   0.064     .9715909     1.00079
pyperstudw~e |   .9215236   .0385748    -1.95   0.051     .8489368    1.000317
pyperstudb~k |   .9315877   .0401575    -1.64   0.100     .8561136    1.013716
pyperstudl~o |   .9252636   .0399262    -1.80   0.072     .8502274    1.006922
pyperstudm~e |   .9927702   .0050243    -1.43   0.152     .9829715    1.002667
        male |   1.286115   .4131801     0.78   0.433     .6852057    2.414008
         age |    .954503   .0220795    -2.01   0.044     .9121944     .998774
       Asian |   2.746615   12086.97     0.00   1.000            0           .
       Black |    1.71057   .9041704     1.02   0.310     .6070356    4.820228
      Latino |   5.117006   3.064401     2.73   0.006     1.582196    16.54899
       Other |   1.06e-06   .0029539    -0.00   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   1.164212    .843666     0.21   0.834     .2813162    4.818032
  LatinoMale |   .8563481    .703603    -0.19   0.850     .1711102    4.285729
   OtherMale |    6998419   1.96e+10     0.01   0.996            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.007899   .0126879     0.62   0.532      .983335    1.033076
       exper |   1.059803    .020822     2.96   0.003     1.019768    1.101409
pyperstudlep |    1.00429   .0121255     0.35   0.723     .9808037    1.028339
pyperstude~s |    1.01773    .005585     3.20   0.001     1.006842    1.028735
pyperstudw~e |    .988052   .0387817    -0.31   0.759     .9148914    1.067063
pyperstudb~k |   .9861104    .040007    -0.34   0.730     .9107346    1.067725
pyperstudl~o |   .9763338   .0391386    -0.60   0.550     .9025596    1.056138
pyperstudm~e |   .9939471   .0040403    -1.49   0.135     .9860597    1.001898
        male |   1.956712   .4133134     3.18   0.001     1.293388    2.960226
         age |   .9346984   .0172995    -3.65   0.000     .9013997    .9692272
       Asian |   1.00e+07   1.90e+10     0.01   0.993            0           .
       Black |   .3207735   .2167414    -1.68   0.092     .0853209    1.205984
      Latino |   1.382929   .7608341     0.59   0.556     .4704371    4.065351
       Other |   5.10e-07   .0008922    -0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |    3.95877   3.112483     1.75   0.080     .8478604    18.48401
  LatinoMale |    1.61464   1.125658     0.69   0.492     .4117696    6.331364
   OtherMale |    2862256   5.01e+09     0.01   0.993            0           .
------------------------------------------------------------------------------


---------->  pyschooltype = Elementary

Iteration 0:   log likelihood = -8842.8502
Iteration 1:   log likelihood =  -8331.937
Iteration 2:   log likelihood = -8326.2702
Iteration 3:   log likelihood = -8325.9751
Iteration 4:   log likelihood = -8325.9534
Iteration 5:   log likelihood = -8325.9487
Iteration 6:   log likelihood = -8325.9479
```

```
Iteration 7:   log likelihood = -8325.9478
Iteration 8:   log likelihood = -8325.9478

Multinomial logistic regression                 Number of obs   =       8417
                                                LR chi2(36)     =    1033.80
                                                Prob > chi2     =     0.0000
Log likelihood = -8325.9478                     Pseudo R2       =     0.0585

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.003316    .005046     0.66   0.510     .9934744    1.013255
       exper |   .9940123   .0061893    -0.96   0.335     .9819552    1.006217
pyperstudlep |   1.009751   .0024039     4.08   0.000      1.00505    1.014473
pyperstude~s |   .9843296   .0022276    -6.98   0.000     .9799732    .9887053
pyperstudw~e |    .972361   .0076298    -3.57   0.000     .9575212    .9874308
pyperstudb~k |   .9770187   .0081305    -2.79   0.005     .9612126    .9930848
pyperstudl~o |   .9807361   .0077841    -2.45   0.014     .9655976    .9961118
pyperstudm~e |   1.014102   .0045411     3.13   0.002      1.00524    1.023041
        male |   1.988728   .1859368     7.35   0.000     1.655739    2.388684
         age |   .9883036   .0049838    -2.33   0.020     .9785835    .9981202
       Asian |   .5997038    .391575    -0.78   0.434     .1667812    2.156386
       Black |   1.364152   .1611347     2.63   0.009     1.082226     1.71952
      Latino |   1.053499   .1092339     0.50   0.615     .8597572    1.290899
       Other |    .900062   .3994902    -0.24   0.812     .3771107    2.148207
   AsianMale |    2.16892   2.307736     0.73   0.467     .2695029    17.45516
   BlackMale |   .6832132   .1505356    -1.73   0.084     .4436158    1.052217
  LatinoMale |   .5659002   .1007215    -3.20   0.001     .3992446    .8021224
   OtherMale |   1.10e-06   .0005584    -0.03   0.979            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.010201   .0039447     2.60   0.009     1.002499    1.017962
       exper |   1.051535   .0057468     9.19   0.000     1.040332    1.062859
pyperstudlep |   1.000302    .002094     0.14   0.885     .9962061    1.004415
pyperstude~s |   1.003962   .0020485     1.94   0.053     .9999549    1.007985
pyperstudw~e |   1.006006   .0079701     0.76   0.450     .9905055    1.021749
pyperstudb~k |   .9951405   .0083258    -0.58   0.560     .9789554    1.011593
pyperstudl~o |   .9980354   .0080631    -0.24   0.808     .9823564    1.013965
pyperstudm~e |   1.001573    .004015     0.39   0.695     .9937348    1.009474
        male |   3.125825   .2376101    14.99   0.000      2.69315    3.628014
         age |   1.003986   .0046821     0.85   0.394     .9948511    1.013205
       Asian |   .6316284   .3496289    -0.83   0.407     .2134476    1.869098
       Black |   1.076501   .1177648     0.67   0.500     .8687534    1.333928
      Latino |   1.268122   .1161814     2.59   0.010     1.059685    1.517559
       Other |   .4899295    .233138    -1.50   0.134     .1927883    1.245049
   AsianMale |   2.628991   2.335802     1.09   0.277     .4608022    14.99904
   BlackMale |   .5169121   .1024638    -3.33   0.001     .3505009    .7623322
  LatinoMale |   .4829243   .0715476    -4.91   0.000     .3612179    .6456375
   OtherMale |    1.16071   .8869762     0.20   0.845     .2595757    5.190195
------------------------------------------------------------------------------


---------> pyschooltype = Middle

Iteration 0:   log likelihood =  -4940.526
Iteration 1:   log likelihood = -4666.7796
Iteration 2:   log likelihood = -4659.7766
Iteration 3:   log likelihood = -4659.0644
Iteration 4:   log likelihood = -4658.9444
Iteration 5:   log likelihood = -4658.9322
Iteration 6:   log likelihood = -4658.9297
Iteration 7:   log likelihood = -4658.9292
Iteration 8:   log likelihood = -4658.9291
Iteration 9:   log likelihood = -4658.9291
```

```
Multinomial logistic regression                 Number of obs   =       4753
                                                LR chi2(36)     =     563.19
                                                Prob > chi2     =     0.0000
Log likelihood = -4658.9291                     Pseudo R2       =     0.0570

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.005224   .0056085     0.93   0.350     .9942913    1.016277
       exper |   1.008053   .0071762     1.13   0.260     .9940853    1.022216
pyperstudlep |   1.013711   .0041532     3.32   0.001     1.005604    1.021884
pyperstude~s |   .9950947    .002902    -1.69   0.092      .989423    1.000799
pyperstudw~e |   .9810694   .0100228    -1.87   0.061     .9616203    1.000912
pyperstudb~k |    .981946   .0106978    -1.67   0.094     .9612008    1.003139
pyperstudl~o |   .9769395   .0102941    -2.21   0.027     .9569704    .9973253
pyperstudm~e |   1.007764   .0043029     1.81   0.070     .9993661    1.016233
        male |   1.675833   .1439691     6.01   0.000     1.416136    1.983155
         age |   .9651465   .0058674    -5.84   0.000     .9537149    .9767152
       Asian |   .4569259    .497473    -0.72   0.472     .0540891    3.859953
       Black |   1.085561   .1605309     0.56   0.579     .8124186    1.450536
      Latino |   2.060593   .3080963     4.84   0.000      1.53717    2.762246
       Other |   5.34e-07   .0003124    -0.02   0.980            0           .
   AsianMale |   1.48e-06   .0009054    -0.02   0.982            0           .
   BlackMale |   1.871612   .3813477     3.08   0.002     1.255395    2.790302
  LatinoMale |   1.062816   .1992888     0.32   0.745     .7359512    1.534854
   OtherMale |    2004501   1.17e+09     0.02   0.980            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.006079    .005646     1.08   0.280     .9950733    1.017206
       exper |    1.06582    .009214     7.37   0.000     1.047913    1.084033
pyperstudlep |   1.002321   .0049435     0.47   0.638     .9926789    1.012057
pyperstude~s |   1.012139   .0034508     3.54   0.000     1.005399    1.018925
pyperstudw~e |   1.029222   .0140644     2.11   0.035     1.002022     1.05716
pyperstudb~k |   1.010331   .0146967     0.71   0.480     .9819329    1.039551
pyperstudl~o |   1.009842   .0142419     0.69   0.487     .9823107    1.038145
pyperstudm~e |   .9972093    .005691    -0.49   0.624     .9861172    1.008426
        male |   2.423853    .226684     9.47   0.000     2.017902    2.911471
         age |    .961439   .0074709    -5.06   0.000     .9469073    .9761937
       Asian |   6.84e-07   .0006162    -0.02   0.987            0           .
       Black |   .9173675   .1835654    -0.43   0.666     .6197518    1.357904
      Latino |   1.966835   .3593748     3.70   0.000     1.374797    2.813826
       Other |   .8381762   .6545404    -0.23   0.821     .1813941    3.872999
   AsianMale |    2343095   2.11e+09     0.02   0.987            0           .
   BlackMale |   1.583132   .4071385     1.79   0.074      .956338    2.620735
  LatinoMale |   .8287868   .1818048    -0.86   0.392     .5391642    1.273986
   OtherMale |   1.925949   1.928865     0.65   0.513      .270492    13.71308
------------------------------------------------------------------------------


---------> pyschooltype = Secondary

Iteration 0:   log likelihood = -5821.4525
Iteration 1:   log likelihood = -5541.7681
Iteration 2:   log likelihood = -5528.5892
Iteration 3:   log likelihood =  -5528.413
Iteration 4:   log likelihood = -5528.3746
Iteration 5:   log likelihood = -5528.3654
Iteration 6:   log likelihood = -5528.3634
Iteration 7:   log likelihood =  -5528.363
Iteration 8:   log likelihood = -5528.3629
Iteration 9:   log likelihood = -5528.3629

Multinomial logistic regression                 Number of obs   =       6170
```

```
                                                LR chi2(36)     =     586.18
                                                Prob > chi2     =     0.0000
Log likelihood = -5528.3629                     Pseudo R2       =     0.0503

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9975777   .0044785    -0.54   0.589     .9888385    1.006394
       exper |   1.001458   .0061909     0.24   0.814     .9893973    1.013666
pyperstudlep |   1.013075    .004344     3.03   0.002     1.004597    1.021625
pyperstude~s |   .9968904   .0024112    -1.29   0.198     .9921758    1.001627
pyperstudw~e |   .9818739   .0078678    -2.28   0.022     .9665736    .9974163
pyperstudb~k |   .9810071   .0082494    -2.28   0.023     .9649711    .9973096
pyperstudl~o |   .9809111   .0080278    -2.36   0.019     .9653024    .9967722
pyperstudm~e |   1.000887   .0026823     0.33   0.741     .9956438    1.006158
        male |   1.237788   .0934297     2.83   0.005     1.067571    1.435146
         age |    .979089   .0055545    -3.73   0.000     .9682626    .9900364
       Asian |   1.290012   .8996754     0.37   0.715     .3288153    5.060991
       Black |    1.63139   .2360202     3.38   0.001     1.228601    2.166231
      Latino |   1.332059   .1937558     1.97   0.049     1.001639    1.771477
       Other |   .3509014   .2638348    -1.39   0.164      .080387    1.531737
   AsianMale |   2.310087   2.188732     0.88   0.377     .3606972    14.79496
   BlackMale |   1.552389   .2941777     2.32   0.020     1.070774    2.250626
  LatinoMale |   1.779456   .3070908     3.34   0.001     1.268793    2.495652
   OtherMale |   3.102742   2.732274     1.29   0.199     .5523035    17.43065
-------------+----------------------------------------------------------------
3            |
      tenure |   .9796612   .0049918    -4.03   0.000     .9699261     .989494
       exper |   1.060918   .0088079     7.12   0.000     1.043795    1.078323
pyperstudlep |   .9832751   .0061818    -2.68   0.007     .9712334    .9954661
pyperstude~s |   1.022816   .0030761     7.50   0.000     1.016805    1.028863
pyperstudw~e |   1.053981   .0154412     3.59   0.000     1.024147    1.084684
pyperstudb~k |   1.035141   .0157804     2.27   0.023      1.00467    1.066537
pyperstudl~o |   1.035629   .0154436     2.35   0.019     1.005799    1.066345
pyperstudm~e |   1.014122   .0028181     5.05   0.000     1.008614    1.019661
        male |    2.41282   .2425478     8.76   0.000     1.981336    2.938269
         age |   .9705759   .0078065    -3.71   0.000     .9553954    .9859976
       Asian |   5.40e-06   .0026904    -0.02   0.981            0           .
       Black |   1.095828   .2788899     0.36   0.719     .6654418    1.804573
      Latino |   1.266341   .2766015     1.08   0.280     .8253277     1.94301
       Other |   .8225142   .6398789    -0.25   0.802     .1790387    3.778677
   AsianMale |   557006.3   2.77e+08     0.03   0.979            0           .
   BlackMale |   1.077386   .3357879     0.24   0.811     .5848956    1.984561
  LatinoMale |   1.294367   .3179795     1.05   0.294     .7997385    2.094919
   OtherMale |   1.379918   1.293593     0.34   0.731     .2197362    8.665731
------------------------------------------------------------------------------
```

1997-98

```
. mlogit admin  tenure exper  pyperstudlep pyperstudecodis pyperstudwhite pyperstudblack
pyperstudlatino pyperstudmobile male age Asian Black Latino Oth
> er AsianMale BlackMale LatinoMale OtherMale if validcert1998a==1, rrr

Iteration 0:   log likelihood = -21695.433
Iteration 1:   log likelihood =  -20705.42
Iteration 2:   log likelihood = -20686.782
Iteration 3:   log likelihood = -20686.751
Iteration 4:   log likelihood = -20686.751

Multinomial logistic regression                 Number of obs   =      20775
                                                LR chi2(36)     =    2017.36
                                                Prob > chi2     =     0.0000
Log likelihood = -20686.751                     Pseudo R2       =     0.0465
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9995903   .0027129    -0.15   0.880     .9942872    1.004922
       exper |   .9958735   .0034401    -1.20   0.231     .9891537    1.002639
pyperstudlep |   1.008212    .001548     5.33   0.000     1.005182    1.011251
pyperstude~s |   .9939145   .0012087    -5.02   0.000     .9915483    .9962863
pyperstudw~e |   .9738124   .0043673    -5.92   0.000     .9652902    .9824099
pyperstudb~k |   .9762431   .0046423    -5.06   0.000     .9671867    .9853843
pyperstudl~o |   .9754077    .004458    -5.45   0.000     .9667092    .9841846
pyperstudm~e |   .9986165   .0015477    -0.89   0.372     .9955876    1.001655
        male |   1.282387   .0558176     5.71   0.000     1.177523     1.39659
         age |   .9805898   .0029317    -6.56   0.000     .9748606    .9863527
       Asian |   .9474447   .3750735    -0.14   0.892     .4360949    2.058386
       Black |   1.370411   .1004842     4.30   0.000     1.186964    1.582212
      Latino |   1.407334   .0968508     4.97   0.000     1.229756    1.610556
       Other |    .678303   .2063081    -1.28   0.202     .3737042    1.231174
   AsianMale |   1.546292   .8880739     0.76   0.448     .5016783     4.76604
   BlackMale |   1.544104   .1674902     4.01   0.000     1.248377    1.909884
  LatinoMale |   1.391377   .1289505     3.56   0.000     1.160264    1.668525
   OtherMale |    2.01054   .8568077     1.64   0.101     .8721003    4.635099
-------------+----------------------------------------------------------------
3            |
      tenure |    1.00635   .0024563     2.59   0.010     1.001547    1.011176
       exper |    1.04787   .0037984    12.90   0.000     1.040452    1.055342
pyperstudlep |   1.008404   .0015273     5.53   0.000     1.005415    1.011402
pyperstude~s |   1.025308   .0012766    20.07   0.000     1.022809    1.027813
pyperstudw~e |    1.01175   .0053237     2.22   0.026      1.00137    1.022239
pyperstudb~k |   .9891742   .0055175    -1.95   0.051      .978419    1.000048
pyperstudl~o |   .9861519    .005309    -2.59   0.010     .9758012    .9966124
pyperstudm~e |   1.000588   .0016139     0.36   0.716     .9974295    1.003756
        male |   1.512093   .0622815    10.04   0.000     1.394821    1.639226
         age |   .9880894   .0032334    -3.66   0.000     .9817723    .9944472
       Asian |   .4376673   .2210356    -1.64   0.102     .1626525     1.17768
       Black |   .9581197   .0776964    -0.53   0.598     .8173229    1.123171
      Latino |   1.320236   .0924505     3.97   0.000     1.150922     1.51446
       Other |   .5169652   .1757339    -1.94   0.052     .2655273    1.006499
   AsianMale |   3.647593   2.327812     2.03   0.043     1.044212     12.7416
   BlackMale |   1.262075   .1543182     1.90   0.057     .9931291    1.603852
  LatinoMale |   .9632647   .0926459    -0.39   0.697     .7977703     1.16309
   OtherMale |   2.238674   1.023282     1.76   0.078     .9139288    5.483643
------------------------------------------------------------------------------
. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=20775)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |      7.903    2    0.019
       exper |    203.566    2    0.000
pyperstudlep |     43.628    2    0.000
pyperstude~s |    566.723    2    0.000
pyperstudw~e |     54.010    2    0.000
pyperstudb~k |     25.538    2    0.000
pyperstudl~o |     30.312    2    0.000
pyperstudm~e |      1.224    2    0.542
        male |    108.605    2    0.000
         age |     47.065    2    0.000
       Asian |      3.216    2    0.200
       Black |     21.488    2    0.000
      Latino |     30.931    2    0.000
       Other |      5.006    2    0.082
```

```
   AsianMale |      4.476    2    0.107
   BlackMale |     16.382    2    0.000
  LatinoMale |     16.164    2    0.000
   OtherMale |      4.685    2    0.096
-------------------------------------

**** Wald tests for independent variables (N=20775)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+------------------------
      tenure |      7.875    2    0.019
       exper |    192.976    2    0.000
pyperstudlep |     43.216    2    0.000
pyperstude~s |    535.324    2    0.000
pyperstudw~e |     54.975    2    0.000
pyperstudb~k |     25.650    2    0.000
pyperstudl~o |     30.346    2    0.000
pyperstudm~e |      1.214    2    0.545
        male |    108.242    2    0.000
         age |     46.563    2    0.000
       Asian |      2.713    2    0.258
       Black |     21.906    2    0.000
      Latino |     30.936    2    0.000
       Other |      4.660    2    0.097
   AsianMale |      4.150    2    0.126
   BlackMale |     16.289    2    0.000
  LatinoMale |     16.152    2    0.000
   OtherMale |      4.572    2    0.102
-------------------------------------

**** Hausman tests of IIA assumption (N=20775)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+----------------------------------
       2 |   -82.828   18     ---    ---
       3 |    -5.552   18     ---    ---
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=20775)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+--------------------------------------------------------
       2 |  -4768.330  -4759.499  17.663   19    0.545   for Ho
       3 |  -4772.761  -4762.482  20.558   19    0.362   for Ho
-------------------------------------------------------------------

**** Wald tests for combining alternatives (N=20775)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1300.011   18    0.000
       2-       1  |  501.925   18    0.000
       3-       1  | 1086.189   18    0.000
-----------------------------------------------

**** LR tests for combining alternatives (N=20775)
```

```
 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+-----------------------
       2-       3  | 1454.013   18    0.000
       2-       1  |  514.145   18    0.000
       3-       1  | 1201.506   18    0.000
-------------------------------------------
by region

. bysort region: mlogit admin  tenure exper  pyperstudlep pyperstudecodis pyperstudwhite
pyperstudblack pyperstudlatino pyperstudmobile male age Asian B
> lack Latino Other AsianMale BlackMale LatinoMale OtherMale if validcert1998a==1, rrr


---------->  region = 1

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1437.8992
Iteration 1:   log likelihood = -1334.7904
Iteration 2:   log likelihood = -1331.7568
Iteration 3:   log likelihood = -1331.5694
Iteration 4:   log likelihood = -1331.5367
Iteration 5:   log likelihood = -1331.5335
Iteration 6:   log likelihood = -1331.5328
Iteration 7:   log likelihood = -1331.5327
Iteration 8:   log likelihood = -1331.5327
Iteration 9:   log likelihood = -1331.5326

Multinomial logistic regression                 Number of obs   =       1347
                                                LR chi2(34)     =     212.73
                                                Prob > chi2     =     0.0000
Log likelihood = -1331.5326                     Pseudo R2       =     0.0740

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.007365   .0103485     0.71   0.475      .987285    1.027853
       exper |   1.031215   .0146815     2.16   0.031     1.002837    1.060395
pyperstudlep |   .9988833   .0038064    -0.29   0.769     .9914506    1.006372
pyperstude~s |   .9894091   .0071283    -1.48   0.139     .9755361    1.003479
pyperstudw~e |   1.246974    .161726     1.70   0.089     .9670773    1.607881
pyperstudb~k |   1.292683   .2834144     1.17   0.242     .8411438    1.986616
pyperstudl~o |   1.263618   .1551127     1.91   0.057     .9934096    1.607323
pyperstudm~e |   .9889006   .0082292    -1.34   0.180     .9729024    1.005162
        male |   1.312453   .3821433     0.93   0.350     .7417229     2.32234
         age |   .9549353   .0120561    -3.65   0.000     .9315957    .9788596
       Asian |   3.63e-07   .0007385    -0.01   0.994            0           .
       Black |   3.076838   4.447139     0.78   0.437     .1810557    52.28742
      Latino |   1.185195   .2719094     0.74   0.459     .7559719     1.85812
       Other |   1.968793    2.83772     0.47   0.638      .116767    33.19554
   AsianMale |  (omitted)
   BlackMale |   9.35e-08   .0002663    -0.01   0.995            0           .
  LatinoMale |   1.698102   .5561998     1.62   0.106     .8936337     3.22677
   OtherMale |   .5241891    1.02223    -0.33   0.740     .0114695    23.95689
-------------+----------------------------------------------------------------
3            |
      tenure |   1.034992   .0107798     3.30   0.001     1.014078    1.056337
       exper |   1.090755   .0195095     4.86   0.000      1.05318    1.129671
pyperstudlep |   1.012264   .0040114     3.08   0.002     1.004432    1.020157
pyperstude~s |    1.02125   .0088422     2.43   0.015     1.004065    1.038728
pyperstudw~e |   1.125792   .1450933     0.92   0.358     .8744894    1.449312
```

```
pyperstudb~k |   .8988325   .1991187    -0.48   0.630      .582253    1.387541
pyperstudl~o |   1.060322   .1289353     0.48   0.630     .8354712    1.345687
pyperstudm~e |   1.014384    .007043     2.06   0.040     1.000674    1.028282
        male |   .6678467   .2302723    -1.17   0.242     .3397693    1.312712
         age |   .9518792   .0154099    -3.05   0.002     .9221506    .9825662
       Asian |   8.83e-08   .0001795    -0.01   0.994            0           .
       Black |   3.49e-06   .0060865    -0.01   0.994            0           .
      Latino |   1.071025   .2469612     0.30   0.766     .6815945    1.682957
       Other |   7.53e-07   .0012959    -0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |   .0465361   163.2408    -0.00   0.999            0           .
  LatinoMale |   2.450396    .934395     2.35   0.019      1.16052    5.173922
   OtherMale |    1215666   2.09e+09     0.01   0.994            0           .
------------------------------------------------------------------------------


--------->  region = 2

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -825.0379
Iteration 1:   log likelihood = -771.06518
Iteration 2:   log likelihood = -769.10322
Iteration 3:   log likelihood = -769.01737
Iteration 4:   log likelihood = -768.99988
Iteration 5:   log likelihood = -768.99617
Iteration 6:   log likelihood = -768.99534
Iteration 7:   log likelihood = -768.99514
Iteration 8:   log likelihood =  -768.9951
Iteration 9:   log likelihood = -768.99509

Multinomial logistic regression                 Number of obs   =        864
                                                LR chi2(32)     =     112.09
                                                Prob > chi2     =     0.0000
Log likelihood = -768.99509                     Pseudo R2       =     0.0679

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9993025   .0160527    -0.04   0.965     .9683299    1.031266
       exper |   .9642519   .0185941    -1.89   0.059     .9284882    1.001393
pyperstudlep |   1.002942   .0209461     0.14   0.888     .9627177    1.044848
pyperstude~s |   1.000856   .0058999     0.15   0.885      .989359    1.012487
pyperstudw~e |   1.031247   .0667846     0.48   0.635     .9083179    1.170812
pyperstudb~k |   1.035225   .0670764     0.53   0.593      .911763    1.175405
pyperstudl~o |   1.024474   .0629576     0.39   0.694     .9082207    1.155607
pyperstudm~e |   1.004122   .0087272     0.47   0.636     .9871617    1.021373
        male |   1.298681   .3426959     0.99   0.322     .7742614    2.178299
         age |   1.009037   .0157838     0.58   0.565     .9785711    1.040452
       Asian |  (omitted)
       Black |   1.440919   1.051647     0.50   0.617     .3446632    6.023993
      Latino |     1.2089   .3320947     0.69   0.490     .7055998    2.071202
       Other |   2.91e-06   .0023769    -0.02   0.988            0           .
   AsianMale |  (omitted)
   BlackMale |    6.66632   7.430114     1.70   0.089     .7501673    59.23988
  LatinoMale |   1.388019   .5463776     0.83   0.405     .6416963    3.002348
   OtherMale |    1043421   8.51e+08     0.02   0.986            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9829448   .0121834    -1.39   0.165     .9593535    1.007116
       exper |     1.0792   .0202107     4.07   0.000     1.040306    1.119548
pyperstudlep |   1.045281   .0166751     2.78   0.006     1.013105     1.07848
pyperstude~s |   1.019336   .0057955     3.37   0.001      1.00804    1.030758
pyperstudw~e |   1.200012   .0790596     2.77   0.006     1.054645    1.365415
```

```
pyperstudb~k |   1.151543   .0790572     2.06   0.040     1.006567    1.317401
pyperstudl~o |   1.166942   .0734981     2.45   0.014     1.031425    1.320265
pyperstudm~e |   .9988253   .0092397    -0.13   0.899     .9808789      1.0171
        male |   1.119292   .2825925     0.45   0.655     .6823962    1.835904
         age |   .9855719   .0170901    -0.84   0.402     .9526387    1.019644
       Asian |  (omitted)
       Black |   1.607519   1.100546     0.69   0.488     .4201493    6.150477
      Latino |   1.030705   .2602979     0.12   0.905     .6283031     1.69083
       Other |   2.846138   3.567636     0.83   0.404     .2439352     33.2076
   AsianMale |  (omitted)
   BlackMale |   5.935456   6.522491     1.62   0.105     .6887571    51.14958
  LatinoMale |   1.846893   .6682692     1.70   0.090     .9087571    3.753493
   OtherMale |   1.84e-06   .0020617    -0.01   0.991            0           .
------------------------------------------------------------------------------


---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -348.98186
Iteration 1:   log likelihood =  -308.0239
Iteration 2:   log likelihood = -305.47803
Iteration 3:   log likelihood = -305.24046
Iteration 4:   log likelihood = -305.21062
Iteration 5:   log likelihood = -305.20571
Iteration 6:   log likelihood = -305.20455
Iteration 7:   log likelihood =  -305.2043
Iteration 8:   log likelihood = -305.20424
Iteration 9:   log likelihood = -305.20423

Multinomial logistic regression                 Number of obs   =        338
                                                LR chi2(30)     =      87.56
                                                Prob > chi2     =     0.0000
Log likelihood = -305.20423                     Pseudo R2       =     0.1254

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9987241   .0236587    -0.05   0.957     .9534138    1.046188
       exper |    1.01242   .0361231     0.35   0.729      .944039    1.085754
pyperstudlep |   .9269194   .0562502    -1.25   0.211     .8229752    1.043992
pyperstude~s |   .9827815   .0137449    -1.24   0.214     .9562079    1.010094
pyperstudw~e |   .9844437   .0505265    -0.31   0.760     .8902315    1.088626
pyperstudb~k |   1.039118    .052358     0.76   0.446     .9414025    1.146976
pyperstudl~o |   1.028463   .0534954     0.54   0.590     .9287809    1.138843
pyperstudm~e |   1.001803   .0158439     0.11   0.909     .9712258    1.033343
        male |   1.065877   .4017295     0.17   0.866     .5092004    2.231132
         age |    .941899   .0295614    -1.91   0.056     .8857057    1.001657
       Asian |  (omitted)
       Black |   2.225279   2.155632     0.83   0.409      .333291    14.85748
      Latino |    3.02153   1.966873     1.70   0.089     .8435971    10.82228
       Other |   974227.2   6.73e+08     0.02   0.984            0           .
   AsianMale |  (omitted)
   BlackMale |   1.330009   2.183684     0.17   0.862      .053248    33.22045
  LatinoMale |   1.102595   1.023164     0.11   0.916     .1788691    6.796678
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9827765   .0178047    -0.96   0.338     .9484922      1.0183
       exper |   1.065604   .0301212     2.25   0.025     1.008173    1.126307
pyperstudlep |   1.089623   .0415138     2.25   0.024     1.011222    1.174104
pyperstude~s |   1.020111   .0115011     1.77   0.077     .9978163    1.042904
```

```
pyperstudw~e |    1.11901   .0506427     2.48   0.013     1.024027    1.222803
pyperstudb~k |   1.133615   .0504162     2.82   0.005     1.038985    1.236864
pyperstudl~o |   1.106508   .0508825     2.20   0.028     1.011142    1.210868
pyperstudm~e |    1.01623   .0150485     1.09   0.277     .9871591    1.046156
        male |   3.040026   .9249331     3.65   0.000     1.674549    5.518954
         age |    .969571   .0259457    -1.15   0.248     .9200289    1.021781
       Asian |  (omitted)
       Black |   4.491674   3.847904     1.75   0.080     .8379253    24.07749
      Latino |   .7326414   .6456537    -0.35   0.724      .130243    4.121245
       Other |     326902   2.26e+08     0.02   0.985            0           .
   AsianMale |  (omitted)
   BlackMale |   1.51e-07   .0001381    -0.02   0.986            0           .
  LatinoMale |    2.67974    2.87126     0.92   0.358     .3281377    21.88413
   OtherMale |  (omitted)
-------------------------------------------------------------------------------


---------->  region = 4

Iteration 0:   log likelihood =  -4431.908
Iteration 1:   log likelihood = -4184.8621
Iteration 2:   log likelihood = -4175.0568
Iteration 3:   log likelihood = -4175.0319
Iteration 4:   log likelihood = -4175.0319

Multinomial logistic regression                 Number of obs   =       4304
                                                LR chi2(36)     =     513.75
                                                Prob > chi2     =     0.0000
Log likelihood = -4175.0319                     Pseudo R2       =     0.0580

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |    1.00907   .0060836     1.50   0.134     .9972171    1.021065
       exper |   1.022937      .0086     2.70   0.007     1.006219    1.039932
pyperstudlep |    1.00273   .0045373     0.60   0.547     .9938763    1.011662
pyperstude~s |   .9974713   .0026329    -0.96   0.337     .9923241    1.002645
pyperstudw~e |   .9912704   .0067644    -1.28   0.199     .9781006    1.004617
pyperstudb~k |   .9858729   .0073243    -1.92   0.055     .9716215    1.000333
pyperstudl~o |   .9913619   .0070059    -1.23   0.220     .9777252    1.005189
pyperstudm~e |   .9998825   .0031334    -0.04   0.970     .9937599    1.006043
        male |   1.194531   .1124347     1.89   0.059     .9932951    1.436535
         age |   .9564472   .0067629    -6.30   0.000     .9432836    .9697946
       Asian |   .7978304   .5598951    -0.32   0.748     .2016327    3.156895
       Black |    .966217    .115058    -0.29   0.773     .7650906    1.220215
      Latino |   1.270821   .2194946     1.39   0.165     .9058703    1.782801
       Other |   .7012428   .4200103    -0.59   0.553     .2167905     2.26828
   AsianMale |   .3988409   .5180186    -0.71   0.479     .0312788    5.085679
   BlackMale |   1.655006   .2945872     2.83   0.005     1.167583    2.345911
  LatinoMale |   1.246369    .338556     0.81   0.417     .7318658    2.122569
   OtherMale |   1.717282    1.90255     0.49   0.625     .1957981    15.06173
-------------+-----------------------------------------------------------------
3            |
      tenure |   1.033669   .0068312     5.01   0.000     1.020366    1.047145
       exper |   1.080441   .0113849     7.34   0.000     1.058356    1.102987
pyperstudlep |   1.009892   .0053267     1.87   0.062      .999506    1.020387
pyperstude~s |   1.026669    .003448     7.84   0.000     1.019933    1.033449
pyperstudw~e |   1.001513   .0087185     0.17   0.862     .9845698    1.018747
pyperstudb~k |   .9798887   .0095682    -2.08   0.037     .9613137    .9988227
pyperstudl~o |   .9720972   .0089599    -3.07   0.002     .9546938    .9898177
pyperstudm~e |   1.001349   .0039884     0.34   0.735     .9935626    1.009197
        male |   1.187195   .1285202     1.59   0.113     .9602294    1.467808
         age |   .9669023   .0087578    -3.72   0.000     .9498888    .9842205
       Asian |   .3843239   .4163992    -0.88   0.377      .045968    3.213211
```

```
       Black |   .5240621   .0802603    -4.22   0.000     .3881691    .7075294
      Latino |   1.722021   .3201763     2.92   0.003     1.196118     2.47915
       Other |   .7051108   .5578646    -0.44   0.659      .149558    3.324337
   AsianMale |   1.050545   1.624944     0.03   0.975     .0506766     21.7782
   BlackMale |   1.693225   .3860554     2.31   0.021      1.08303    2.647211
  LatinoMale |   1.023745    .319942     0.08   0.940     .5548467    1.888906
   OtherMale |   3.716794   4.577967     1.07   0.286     .3324646    41.55197
------------------------------------------------------------------------------


--------->  region = 5

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -554.08847
Iteration 1:   log likelihood =  -495.8567
Iteration 2:   log likelihood =  -493.7632
Iteration 3:   log likelihood = -493.59838
Iteration 4:   log likelihood = -493.57293
Iteration 5:   log likelihood = -493.56676
Iteration 6:   log likelihood = -493.56548
Iteration 7:   log likelihood =  -493.5652
Iteration 8:   log likelihood = -493.56514
Iteration 9:   log likelihood = -493.56513

Multinomial logistic regression                 Number of obs   =        552
                                                LR chi2(32)     =     121.05
                                                Prob > chi2     =     0.0000
Log likelihood = -493.56513                     Pseudo R2       =     0.1092

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.021915   .0182611     1.21   0.225     .9867437    1.058341
       exper |   .9918577   .0266674    -0.30   0.761     .9409437    1.045527
pyperstudlep |   .9596842    .041111    -0.96   0.337      .882398     1.04374
pyperstude~s |   1.012775   .0090038     1.43   0.153     .9952808    1.030577
pyperstudw~e |   .9863178   .0384813    -0.35   0.724     .9137073    1.064698
pyperstudb~k |   .9730454   .0387842    -0.69   0.493     .8999231    1.052109
pyperstudl~o |   1.000937   .0437383     0.02   0.983      .91878    1.090441
pyperstudm~e |   .9984191   .0187361    -0.08   0.933     .9623641    1.035825
        male |   3.085023   .8735212     3.98   0.000     1.771094    5.373723
         age |   .9671587   .0221492    -1.46   0.145      .924707    1.011559
       Asian |  (omitted)
       Black |   2.233716   .9034897     1.99   0.047     1.010963    4.935379
      Latino |   3.718203   4.754199     1.03   0.304     .3033631    45.57256
       Other |   1.12e-06   .0020117    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   .9586758   .5033147    -0.08   0.936     .3425959    2.682634
  LatinoMale |   2.48e-07   .0002231    -0.02   0.987            0           .
   OtherMale |   9.85e+12   3.13e+16     0.01   0.992            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.031869   .0167674     1.93   0.054     .9995234    1.065261
       exper |   1.052342   .0301638     1.78   0.075     .9948522    1.113154
pyperstudlep |   .9847584   .0414616    -0.36   0.715     .9067577    1.069469
pyperstude~s |   1.046988   .0095404     5.04   0.000     1.028455    1.065855
pyperstudw~e |   1.018171   .0383966     0.48   0.633     .9456293    1.096278
pyperstudb~k |   .9776213    .037844    -0.58   0.559     .9061924     1.05468
pyperstudl~o |   .9938044   .0436228    -0.14   0.887     .9118798    1.083089
pyperstudm~e |   1.010653   .0175037     0.61   0.541     .9769225    1.045549
        male |   4.763957    1.36887     5.43   0.000     2.712592    8.366643
         age |   .9626609   .0248156    -1.48   0.140     .9152315    1.012548
       Asian |  (omitted)
```

```
       Black |   2.103961   .9388933     1.67   0.096     .8773818    5.045296
      Latino |   8.56e-06   .0073364    -0.01   0.989            0           .
       Other |   2.76e-06   .0047393    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   .7057475   .4106435    -0.60   0.549     .2256174     2.20763
  LatinoMale |   55247.93   4.74e+07     0.01   0.990            0           .
   OtherMale |   528854.1   2.68e+09     0.00   0.998            0           .
------------------------------------------------------------------------------


---------->  region = 6

Iteration 0:   log likelihood = -707.63253
Iteration 1:   log likelihood = -667.97373
Iteration 2:   log likelihood = -667.18773
Iteration 3:   log likelihood = -667.08962
Iteration 4:   log likelihood = -667.07085
Iteration 5:   log likelihood = -667.06681
Iteration 6:   log likelihood = -667.06588
Iteration 7:   log likelihood = -667.06566
Iteration 8:   log likelihood = -667.06561
Iteration 9:   log likelihood =  -667.0656

Multinomial logistic regression                 Number of obs   =        680
                                                LR chi2(36)     =      81.13
                                                Prob > chi2     =     0.0000
Log likelihood =  -667.0656                     Pseudo R2       =     0.0573

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9547062   .0148872    -2.97   0.003     .9259692     .984335
       exper |   .9988459   .0201086    -0.06   0.954     .9602012    1.039046
pyperstudlep |   1.033894   .0229284     1.50   0.133     .9899182    1.079824
pyperstude~s |   1.006584   .0082687     0.80   0.424     .9905077    1.022922
pyperstudw~e |    .971924    .065961    -0.42   0.675     .8508721    1.110198
pyperstudb~k |   .9603793   .0671044    -0.58   0.563     .8374655    1.101333
pyperstudl~o |   .9711997   .0657846    -0.43   0.666     .8504565    1.109085
pyperstudm~e |   .9959413   .0106795    -0.38   0.704     .9752282    1.017094
        male |   1.495355   .3343667     1.80   0.072     .9647454      2.3178
         age |   .9960123   .0180908    -0.22   0.826     .9611787    1.032108
       Asian |   5.07e-07   .0015102    -0.00   0.996            0           .
       Black |   1.403563   .8123273     0.59   0.558     .4514294    4.363892
      Latino |   .1300738   .1437039    -1.85   0.065     .0149208    1.133931
       Other |   5.45e-07   .0016214    -0.00   0.996            0           .
   AsianMale |    1881760   1.28e+10     0.00   0.998            0           .
   BlackMale |   .9399043   .7572729    -0.08   0.939     .1937661    4.559209
  LatinoMale |   11.05575   15.35734     1.73   0.084     .7264389    168.2585
   OtherMale |   .8306509   2862.725    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9807819   .0131001    -1.45   0.146     .9554393    1.006797
       exper |    1.05296   .0219759     2.47   0.013     1.010757    1.096925
pyperstudlep |   1.010456   .0212383     0.49   0.621     .9696754    1.052952
pyperstude~s |   1.032139   .0077553     4.21   0.000      1.01705    1.047452
pyperstudw~e |   .9191234   .0527185    -1.47   0.141     .8213933    1.028481
pyperstudb~k |   .9093596   .0533443    -1.62   0.105     .8105933     1.02016
pyperstudl~o |   .9082654   .0519689    -1.68   0.093     .8119119    1.016054
pyperstudm~e |    .999094   .0095121    -0.10   0.924     .9806234    1.017912
        male |   1.813671   .3799474     2.84   0.004     1.202928    2.734496
         age |   .9800477   .0187874    -1.05   0.293     .9439082    1.017571
       Asian |   4.13e-07   .0010988    -0.01   0.996            0           .
       Black |   .7249597   .4493172    -0.52   0.604     .2151564    2.442719
      Latino |   .1746965   .1915099    -1.59   0.111     .0203779    1.497642
```

```
       Other |   5.10e-07   .0013583    -0.01   0.996           0           .
   AsianMale |   8.38e+12   3.63e+16     0.01   0.995           0           .
   BlackMale |   1.286941   1.051841     0.31   0.758    .2593317    6.38648
  LatinoMale |   7.875029   10.88273     1.49   0.135    .5247501    118.1821
   OtherMale |    3045011   8.11e+09     0.01   0.996           0           .
------------------------------------------------------------------------------


--------->  region = 7

Iteration 0:   log likelihood = -1011.5112
Iteration 1:   log likelihood = -915.34037
Iteration 2:   log likelihood = -908.31718
Iteration 3:   log likelihood = -907.82038
Iteration 4:   log likelihood = -907.77387
Iteration 5:   log likelihood = -907.76426
Iteration 6:   log likelihood = -907.76222
Iteration 7:   log likelihood = -907.76176
Iteration 8:   log likelihood = -907.76165
Iteration 9:   log likelihood = -907.76163

Multinomial logistic regression                 Number of obs   =       1061
                                                LR chi2(36)     =     207.50
                                                Prob > chi2     =     0.0000
Log likelihood = -907.76163                     Pseudo R2       =     0.1026

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9782858   .0143072    -1.50   0.133     .9506422    1.006733
       exper |   1.008943   .0188593     0.48   0.634     .9726483    1.046592
pyperstudlep |   .9824275   .0214171    -0.81   0.416      .941335    1.025314
pyperstude~s |   .9931603   .0083067    -0.82   0.412     .9770123    1.009575
pyperstudw~e |   .7982969   .1176138    -1.53   0.126     .5980757    1.065547
pyperstudb~k |   .8028579   .1186218    -1.49   0.137     .6009995    1.072515
pyperstudl~o |   .8297929   .1229211    -1.26   0.208     .6206935    1.109334
pyperstudm~e |   .9251098   .0233168    -3.09   0.002     .8805202    .9719575
        male |   2.319512   .5335454     3.66   0.000     1.477743    3.640777
         age |   .9800634   .0163287    -1.21   0.227     .9485767    1.012595
       Asian |   7.84e+08   4.60e+12     0.00   0.997           0           .
       Black |   2.148204    .813747     2.02   0.044     1.022439    4.513502
      Latino |   .8467654   .9683931    -0.15   0.884     .0900112    7.965803
       Other |   3.039587   3.798596     0.89   0.374     .2624589    35.20205
   AsianMale |   1.28e-09   8.41e-06    -0.00   0.998           0           .
   BlackMale |    1.74573   .9266531     1.05   0.294     .6168078    4.940881
  LatinoMale |   2.773747    4.18457     0.68   0.499     .1441834    53.36033
   OtherMale |   886235.7   6.07e+08     0.02   0.984           0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9751516   .0101187    -2.42   0.015     .9555197    .9951869
       exper |   1.085924   .0167706     5.34   0.000     1.053547    1.119297
pyperstudlep |   1.021207   .0184108     1.16   0.244     .9857531    1.057937
pyperstude~s |   1.043266     .00632     6.99   0.000     1.030952    1.055727
pyperstudw~e |   .9071406   .1157149    -0.76   0.445     .7064726    1.164807
pyperstudb~k |   .8865619   .1136013    -0.94   0.347     .6896658    1.139671
pyperstudl~o |   .8769251   .1139345    -1.01   0.312     .6797827     1.13124
pyperstudm~e |   1.008041    .009084     0.89   0.374     .9903925    1.026003
        male |   1.989895   .3337328     4.10   0.000     1.432425     2.76432
         age |   .9649334   .0136342    -2.53   0.012     .9385775    .9920294
       Asian |   2.650579   26680.07     0.00   1.000           0           .
       Black |   .7322191   .2522513    -0.90   0.366     .3727348    1.438408
      Latino |   .1972388   .2203127    -1.45   0.146     .0220909    1.761049
       Other |   2.81e-06   .0018974    -0.02   0.985           0           .
   AsianMale |   545010.5   5.53e+09     0.00   0.999           0           .
```

```
   BlackMale |   3.118612   1.548623     2.29   0.022     1.178356    8.253655
  LatinoMale |   6.102967   9.188799     1.20   0.230     .3191156     116.717
   OtherMale |   7.33e+11   7.05e+14     0.03   0.977            0           .
------------------------------------------------------------------------------


---------->  region = 8

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -313.08709
Iteration 1:   log likelihood = -272.25817
Iteration 2:   log likelihood = -268.55963
Iteration 3:   log likelihood = -268.31144
Iteration 4:   log likelihood = -268.26942
Iteration 5:   log likelihood = -268.25985
Iteration 6:   log likelihood = -268.25757
Iteration 7:   log likelihood = -268.25711
Iteration 8:   log likelihood = -268.25704
Iteration 9:   log likelihood = -268.25702

Multinomial logistic regression                 Number of obs   =        316
                                                LR chi2(34)     =      89.66
                                                Prob > chi2     =     0.0000
Log likelihood = -268.25702                     Pseudo R2       =     0.1432

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.00127   .0270866     0.05   0.963     .9495643    1.055791
       exper |   1.074398   .0534255     1.44   0.149     .9746264    1.184382
pyperstudlep |   .8998915   .0688795    -1.38   0.168     .7745287    1.045545
pyperstude~s |   .9804459   .0177165    -1.09   0.274       .94633    1.015792
pyperstudw~e |   .7867016   .2140176    -0.88   0.378     .4615785    1.340832
pyperstudb~k |   .8216583   .2226287    -0.72   0.468      .483123    1.397413
pyperstudl~o |   .8493494   .2312982    -0.60   0.549     .4980624    1.448402
pyperstudm~e |   .9349074   .0403519    -1.56   0.119     .8590719    1.017437
        male |   3.100178   1.389151     2.53   0.012     1.288172     7.46104
         age |   .9002509   .0416097    -2.27   0.023     .8222823    .9856125
       Asian |   2.54e+08   1.83e+12     0.00   0.998            0           .
       Black |   21.81572   21.36089     3.15   0.002     3.201215    148.6704
      Latino |   4.616637   6.445117     1.10   0.273     .2992228      71.229
       Other |   7.92e-07   .0008871    -0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   .1764468   .2193191    -1.40   0.163      .015438    2.016679
  LatinoMale |   1.34e+07   9.68e+10     0.00   0.998            0           .
   OtherMale |    1985762   2.22e+09     0.01   0.990            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |    .976687   .0175134    -1.32   0.188     .9429575    1.011623
       exper |   1.095481   .0345759     2.89   0.004     1.029767    1.165388
pyperstudlep |   .9534509   .0446105    -1.02   0.308     .8699052     1.04502
pyperstude~s |   1.037843   .0110255     3.50   0.000     1.016456    1.059679
pyperstudw~e |   1.012034   .1860866     0.07   0.948     .7057993    1.451138
pyperstudb~k |   .9980009   .1837503    -0.01   0.991     .6956793    1.431702
pyperstudl~o |    1.03202   .1907574     0.17   0.865     .7183781    1.482598
pyperstudm~e |   1.006718   .0162959     0.41   0.679     .9752801     1.03917
        male |    2.45123   .7084474     3.10   0.002     1.391145    4.319126
         age |    .965812   .0273537    -1.23   0.219     .9136605     1.02094
       Asian |     1.3009   14610.39     0.00   1.000            0           .
       Black |   4.897858   4.483567     1.74   0.083     .8143377    29.45831
      Latino |   .6892285   .8340728    -0.31   0.758     .0643099    7.386666
       Other |   7.31e-07   .0004807    -0.02   0.983            0           .
   AsianMale |  (omitted)
   BlackMale |   .3214118   .3834606    -0.95   0.341     .0310124    3.331107
```

```
  LatinoMale |   1.128423   12673.31     0.00   1.000           0           .
   OtherMale |    1425329   9.37e+08     0.02   0.983           0           .
------------------------------------------------------------------------------


---------->  region = 9

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: LatinoMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -207.39036
Iteration 1:   log likelihood = -186.98811
Iteration 2:   log likelihood = -185.36269
Iteration 3:   log likelihood = -184.99509
Iteration 4:   log likelihood = -184.91041
Iteration 5:   log likelihood = -184.89309
Iteration 6:   log likelihood =  -184.8894
Iteration 7:   log likelihood = -184.88857
Iteration 8:   log likelihood = -184.88836
Iteration 9:   log likelihood = -184.88832
Iteration 10:  log likelihood = -184.88831

Multinomial logistic regression                 Number of obs   =        210
                                                LR chi2(28)     =      45.00
                                                Prob > chi2     =     0.0220
Log likelihood = -184.88831                     Pseudo R2       =     0.1085

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.014359   .0356615     0.41   0.685     .9468174    1.086719
       exper |    .994171   .0529868    -0.11   0.913      .895559    1.103641
pyperstudlep |   .9877423   .1171549    -0.10   0.917     .7828592    1.246246
pyperstude~s |   .9727837    .020428    -1.31   0.189     .9335583    1.013657
pyperstudw~e |   .9535646    .198436    -0.23   0.819     .6341847    1.433786
pyperstudb~k |   1.018804   .2313527     0.08   0.935      .652826    1.589951
pyperstudl~o |   .9559802   .1993638    -0.22   0.829     .6352375    1.438672
pyperstudm~e |   .9644676   .0395497    -0.88   0.378     .8899849    1.045184
        male |   1.659143   .8304728     1.01   0.312     .6220435    4.425344
         age |     .97119   .0431375    -0.66   0.510     .8902177    1.059527
       Asian |  (omitted)
       Black |    3816159   3.51e+09     0.02   0.987           0           .
      Latino |   13.71486   59376.92     0.00   1.000           0           .
       Other |    1.96403   2.940729     0.45   0.652     .1043878    36.95273
   AsianMale |  (omitted)
   BlackMale |   2.27e-14   3.51e-11    -0.02   0.984           0           .
  LatinoMale |  (omitted)
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |    1.00442   .0218058     0.20   0.839     .9625774     1.04808
       exper |   1.043712   .0369028     1.21   0.226     .9738334    1.118605
pyperstudlep |   .9920128   .0602613    -0.13   0.895     .8806631    1.117441
pyperstude~s |   1.028089    .012854     2.22   0.027     1.003202    1.053593
pyperstudw~e |   1.350186   .1825486     2.22   0.026     1.035879     1.75986
pyperstudb~k |   1.368586   .1965314     2.19   0.029     1.032852    1.813452
pyperstudl~o |   1.318599   .1774082     2.06   0.040     1.012954    1.716469
pyperstudm~e |   .9891722   .0218103    -0.49   0.621     .9473352    1.032857
        male |   1.931052   .6512408     1.95   0.051     .9970776     3.73989
         age |   .9884848   .0308984    -0.37   0.711     .9297428    1.050938
       Asian |  (omitted)
       Black |    2323530   2.14e+09     0.02   0.987           0           .
      Latino |    8434328   1.73e+10     0.01   0.994           0           .
```

```
       Other |   2.74e-07   .0006799    -0.01   0.995           0           .
   AsianMale |  (omitted)
   BlackMale |   1.87e-07   .0001717    -0.02   0.987           0           .
  LatinoMale |  (omitted)
   OtherMale |  (omitted)
-------------------------------------------------------------------------------


---------->  region = 10

Iteration 0:   log likelihood =  -2848.908
Iteration 1:   log likelihood =  -2703.204
Iteration 2:   log likelihood = -2701.0001
Iteration 3:   log likelihood = -2700.9795
Iteration 4:   log likelihood = -2700.9795

Multinomial logistic regression                 Number of obs   =       2699
                                                LR chi2(36)     =     295.86
                                                Prob > chi2     =     0.0000
Log likelihood = -2700.9795                     Pseudo R2       =     0.0519

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.011445   .0075605     1.52   0.128     .9967348    1.026373
       exper |   1.011582   .0102715     1.13   0.257     .9916491    1.031915
pyperstudlep |   .9973563    .006523    -0.40   0.686      .984653    1.010224
pyperstude~s |   .9956826   .0037534    -1.15   0.251     .9883531    1.003066
pyperstudw~e |   .9892725    .011142    -0.96   0.338     .9676738    1.011353
pyperstudb~k |   .9909325   .0114711    -0.79   0.431     .9687026    1.013672
pyperstudl~o |   .9947459   .0114264    -0.46   0.647     .9726008    1.017395
pyperstudm~e |   .9955134    .005048    -0.89   0.375     .9856685    1.005457
        male |   1.559895   .1855439     3.74   0.000     1.235515    1.969439
         age |   .9661418   .0084316    -3.95   0.000     .9497567    .9828096
       Asian |   .5330736   .5898532    -0.57   0.570     .0609426    4.662869
       Black |   2.239825   .3931782     4.59   0.000     1.587795    3.159612
      Latino |   3.287492   .8435997     4.64   0.000     1.988102    5.436139
       Other |   1.205942   .7254576     0.31   0.756     .3709113    3.920875
   AsianMale |   2.233874   2.788187     0.64   0.520     .1934819    25.79153
   BlackMale |   1.125276   .2976598     0.45   0.655     .6700353    1.889819
  LatinoMale |   1.228428   .4569581     0.55   0.580     .5925356    2.546741
   OtherMale |   .5878194   .5322101    -0.59   0.557     .0996709    3.466726
-------------+-----------------------------------------------------------------
3            |
      tenure |   1.016657   .0070088     2.40   0.017     1.003013    1.030487
       exper |   1.067593   .0116247     6.01   0.000      1.04505    1.090622
pyperstudlep |    1.00796   .0069711     1.15   0.252      .994389    1.021716
pyperstude~s |   1.016147   .0037711     4.32   0.000     1.008783    1.023566
pyperstudw~e |   1.023176   .0119597     1.96   0.050     1.000002    1.046887
pyperstudb~k |   1.004662   .0122723     0.38   0.703     .9808941    1.029005
pyperstudl~o |   .9964264   .0121182    -0.29   0.768      .972956    1.020463
pyperstudm~e |   .9956657   .0052538    -0.82   0.410     .9854216    1.006016
        male |   1.254247   .1453241     1.96   0.051      .999443    1.574012
         age |   .9701736   .0093044    -3.16   0.002     .9521076    .9885824
       Asian |   .6047523   .5338843    -0.57   0.569     .1071826    3.412172
       Black |   1.399741   .2626962     1.79   0.073     .9689441    2.022073
      Latino |   2.511832   .6660666     3.47   0.001     1.493744    4.223817
       Other |   .2342353   .2501045    -1.36   0.174     .0288923    1.898987
   AsianMale |   2.412441   2.477019     0.86   0.391     .3224556     18.0486
   BlackMale |   1.388416   .4012092     1.14   0.256     .7880406    2.446191
  LatinoMale |   1.076351   .4455192     0.18   0.859     .4782199    2.422591
   OtherMale |    3.29528   4.194583     0.94   0.349     .2718895    39.93855
-------------------------------------------------------------------------------
```

```
---------->  region = 11

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =   -2029.57
Iteration 1:   log likelihood = -1869.6665
Iteration 2:   log likelihood = -1867.4381
Iteration 3:   log likelihood = -1867.3024
Iteration 4:   log likelihood = -1867.2915
Iteration 5:   log likelihood = -1867.2893
Iteration 6:   log likelihood =  -1867.289
Iteration 7:   log likelihood = -1867.2889
Iteration 8:   log likelihood = -1867.2889

Multinomial logistic regression                 Number of obs   =       1887
                                                LR chi2(34)     =     324.56
                                                Prob > chi2     =     0.0000
Log likelihood = -1867.2889                     Pseudo R2       =     0.0800

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    .964337   .0093243    -3.76   0.000     .9462338    .9827865
       exper |   .9419939   .0093161    -6.04   0.000     .9239106    .9604312
pyperstudlep |   1.007302   .0115425     0.63   0.525     .9849309    1.030181
pyperstude~s |   .9967623    .004472    -0.72   0.470     .9880358    1.005566
pyperstudw~e |   .9572891   .0166379    -2.51   0.012     .9252287    .9904605
pyperstudb~k |   .9510396   .0172665    -2.76   0.006     .9177929    .9854906
pyperstudl~o |   .9456253   .0168292    -3.14   0.002     .9132093    .9791919
pyperstudm~e |   .9959791   .0048381    -0.83   0.407     .9865417    1.005507
        male |   .8422004     .11184    -1.29   0.196     .6492025    1.092574
         age |   1.030945   .0087556     3.59   0.000     1.013926    1.048249
       Asian |   1.642972   1.449308     0.56   0.574     .2915837     9.25757
       Black |   1.167743   .3105372     0.58   0.560     .6934058    1.966558
      Latino |   2.032406   .7468121     1.93   0.054     .9890873    4.176249
       Other |   1.268232   .9866709     0.31   0.760     .2760406    5.826723
   AsianMale |  (omitted)
   BlackMale |   3.409898   1.417065     2.95   0.003     1.510095    7.699785
  LatinoMale |   .7517195   .3987215    -0.54   0.591     .2658078    2.125905
   OtherMale |   .3722902    .532966    -0.69   0.490     .0225067    6.158163
-------------+----------------------------------------------------------------
3            |
      tenure |   .9827587   .0083537    -2.05   0.041     .9665214    .9992689
       exper |   .9688284   .0094216    -3.26   0.001     .9505372    .9874716
pyperstudlep |   1.010825   .0120944     0.90   0.368     .9873962     1.03481
pyperstude~s |   1.028541   .0044434     6.51   0.000     1.019868    1.037286
pyperstudw~e |   1.029745   .0191272     1.58   0.115     .9929308    1.067925
pyperstudb~k |   .9991093   .0194225    -0.05   0.963     .9617579    1.037911
pyperstudl~o |   .9848491   .0192679    -0.78   0.435     .9477996    1.023347
pyperstudm~e |   1.003956   .0045899     0.86   0.388         .995    1.012992
        male |   1.306888   .1663578     2.10   0.035     1.018325    1.677222
         age |   1.063191   .0095654     6.81   0.000     1.044608    1.082105
       Asian |   3.52e-06   .0018013    -0.02   0.980            0           .
       Black |   1.586716    .453376     1.62   0.106      .906324     2.77789
      Latino |   3.685291   1.373514     3.50   0.000     1.775119    7.650961
       Other |   1.137449   .9930027     0.15   0.883     .2055066    6.295615
   AsianMale |  (omitted)
   BlackMale |   1.134017   .5377268     0.27   0.791     .4477109    2.872376
  LatinoMale |   .2638492    .158804    -2.21   0.027     .0811035    .8583648
   OtherMale |   .2438238   .3580168    -0.96   0.336     .0137158    4.334425
------------------------------------------------------------------------------


---------->  region = 12
```

```
note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -764.85488
Iteration 1:   log likelihood =  -702.4798
Iteration 2:   log likelihood =  -700.2861
Iteration 3:   log likelihood = -700.19484
Iteration 4:   log likelihood = -700.17315
Iteration 5:   log likelihood = -700.16871
Iteration 6:   log likelihood = -700.16777
Iteration 7:   log likelihood = -700.16756
Iteration 8:   log likelihood =  -700.1675
Iteration 9:   log likelihood = -700.16749

Multinomial logistic regression                 Number of obs   =        728
                                                LR chi2(32)     =     129.37
                                                Prob > chi2     =     0.0000
Log likelihood = -700.16749                     Pseudo R2       =     0.0846

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.001445   .0154757     0.09   0.926     .9715675    1.032241
       exper |   .9996622   .0213123    -0.02   0.987     .9587516    1.042318
pyperstudlep |   1.006868   .0229696     0.30   0.764     .9628399    1.052909
pyperstude~s |   .9800589   .0083091    -2.38   0.018     .9639079    .9964804
pyperstudw~e |   .9459904   .0552643    -0.95   0.342     .8436454    1.060751
pyperstudb~k |   .9644281   .0612576    -0.57   0.569     .8515381    1.092284
pyperstudl~o |   .9701249   .0580007    -0.51   0.612     .8628534    1.090733
pyperstudm~e |   1.009438   .0094592     1.00   0.316     .9910674    1.028149
        male |    1.49892     .34258     1.77   0.077     .9577128    2.345966
         age |   .9609223   .0178085    -2.15   0.031     .9266447    .9964679
       Asian |  (omitted)
       Black |   1.310667   .5486301     0.65   0.518     .5770175    2.977114
      Latino |   3.546462   2.747355     1.63   0.102     .7769462    16.18824
       Other |   1.83e-06   .0014296    -0.02   0.987            0           .
   AsianMale |  (omitted)
   BlackMale |   2.722273   1.766015     1.54   0.123     .7633674    9.708003
  LatinoMale |   .2061947   .2224492    -1.46   0.143     .0248872    1.708362
   OtherMale |   7.11e+12   2.09e+16     0.01   0.992            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.008164   .0122544     0.67   0.504     .9844298    1.032471
       exper |   1.072263   .0210695     3.55   0.000     1.031753    1.114364
pyperstudlep |   1.025287    .021304     1.20   0.229     .9843706    1.067904
pyperstude~s |   1.026432   .0073091     3.66   0.000     1.012206    1.040858
pyperstudw~e |   .9546555   .0575466    -0.77   0.441     .8482742    1.074378
pyperstudb~k |   .9352558    .059374    -1.05   0.292     .8258335    1.059176
pyperstudl~o |   .9308931     .05676    -1.17   0.240     .8260357    1.049061
pyperstudm~e |   .9884658   .0113031    -1.01   0.310     .9665584     1.01087
        male |    1.64879   .3275763     2.52   0.012     1.116995    2.433769
         age |   .9651545   .0167876    -2.04   0.041      .932806    .9986248
       Asian |  (omitted)
       Black |    1.75475   .7018838     1.41   0.160     .8012026    3.843156
      Latino |   1.923627   1.649041     0.76   0.445     .3584456     10.3233
       Other |     .86407   1.067879    -0.12   0.906     .0766608    9.739224
   AsianMale |  (omitted)
   BlackMale |   .8443263   .5627175    -0.25   0.800     .2286708    3.117525
  LatinoMale |   .3899743   .4709489    -0.78   0.436     .0365671    4.158932
   OtherMale |   2.026803   9068.329     0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 13
```

```
Iteration 0:   log likelihood = -1189.4141
Iteration 1:   log likelihood =  -1128.004
Iteration 2:   log likelihood = -1126.8106
Iteration 3:   log likelihood = -1126.6107
Iteration 4:   log likelihood = -1126.5769
Iteration 5:   log likelihood = -1126.5692
Iteration 6:   log likelihood = -1126.5674
Iteration 7:   log likelihood =  -1126.567
Iteration 8:   log likelihood = -1126.5669
Iteration 9:   log likelihood = -1126.5669

Multinomial logistic regression                 Number of obs   =       1100
                                                LR chi2(36)     =     125.69
                                                Prob > chi2     =     0.0000
Log likelihood = -1126.5669                     Pseudo R2       =     0.0528

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.013186   .0117953     1.13   0.261      .990329     1.03657
       exper |   1.004179   .0155896     0.27   0.788     .9740843    1.035204
pyperstudlep |   .9878146   .0142145    -0.85   0.394     .9603439    1.016071
pyperstude~s |    .993329   .0074361    -0.89   0.371      .978861    1.008011
pyperstudw~e |    .934562   .0302139    -2.09   0.036     .8771809    .9956966
pyperstudb~k |   .9561532   .0329611    -1.30   0.193     .8936847    1.022988
pyperstudl~o |   .9484858    .030251    -1.66   0.097       .89101    1.009669
pyperstudm~e |   .9946328   .0066478    -0.81   0.421     .9816883    1.007748
        male |   1.036444   .1834118     0.20   0.840     .7326812    1.466144
         age |   .9672393   .0137957    -2.34   0.020     .9405746      .99466
       Asian |   1.836397   5113.292     0.00   1.000            0           .
       Black |    2.23068   .8505689     2.10   0.035     1.056502    4.709822
      Latino |   1.251977   .3652762     0.77   0.441     .7067245    2.217903
       Other |   6.72e-07    .000554    -0.02   0.986            0           .
   AsianMale |    1809981   5.99e+09     0.00   0.997            0           .
   BlackMale |   .9536057   .5692567    -0.08   0.937     .2959665    3.072523
  LatinoMale |   2.483012   1.142299     1.98   0.048     1.007829    6.117451
   OtherMale |    4199374   3.46e+09     0.02   0.985            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9908536    .010988    -0.83   0.407       .96955    1.012625
       exper |   1.055356   .0165075     3.44   0.001     1.023493    1.088211
pyperstudlep |   .9840997   .0137827    -1.14   0.252     .9574535    1.011488
pyperstude~s |   1.033477   .0073597     4.62   0.000     1.019152    1.048003
pyperstudw~e |   .9746461   .0326681    -0.77   0.444     .9126755    1.040824
pyperstudb~k |   .9623287   .0344927    -1.07   0.284     .8970442    1.032364
pyperstudl~o |   .9554075   .0318598    -1.37   0.171     .8949604    1.019937
pyperstudm~e |   .9946691   .0068519    -0.78   0.438     .9813299     1.00819
        male |   1.261627   .2113351     1.39   0.165     .9085449    1.751926
         age |   .9773234   .0143432    -1.56   0.118     .9496116    1.005844
       Asian |    7222629   1.28e+10     0.01   0.993            0           .
       Black |   1.269976   .5624303     0.54   0.589      .533122    3.025272
      Latino |    1.15671    .347758     0.48   0.628     .6416757     2.08513
       Other |   3.98e-07   .0003625    -0.02   0.987            0           .
   AsianMale |   2.39e-07   .0007929    -0.00   0.996            0           .
   BlackMale |    1.14205   .7701844     0.20   0.844     .3045404    4.282772
  LatinoMale |   1.024505   .5322493     0.05   0.963     .3700828    2.836149
   OtherMale |   8.312232   10148.55     0.00   0.999            0           .
------------------------------------------------------------------------------


---------> region = 14

note: Asian omitted because of collinearity
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -284.31818
Iteration 1:   log likelihood = -250.31581
Iteration 2:   log likelihood =  -246.5636
Iteration 3:   log likelihood = -246.27646
Iteration 4:   log likelihood = -246.23298
Iteration 5:   log likelihood = -246.22265
Iteration 6:   log likelihood = -246.22028
Iteration 7:   log likelihood = -246.21978
Iteration 8:   log likelihood = -246.21969
Iteration 9:   log likelihood = -246.21968

Multinomial logistic regression                 Number of obs   =        301
                                                LR chi2(32)     =      76.20
                                                Prob > chi2     =     0.0000
Log likelihood = -246.21968                     Pseudo R2       =     0.1340

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9913852   .0331992    -0.26   0.796     .9284053    1.058637
       exper |   1.027169   .0569561     0.48   0.629     .9213888    1.145092
pyperstudlep |   .8303962   .1245315    -1.24   0.215      .618919    1.114133
pyperstude~s |    .999554   .0209525    -0.02   0.983       .95932    1.041475
pyperstudw~e |    .721135   .1786087    -1.32   0.187     .4438062    1.171763
pyperstudb~k |   .7769295   .2043686    -0.96   0.337     .4639551     1.30103
pyperstudl~o |   .7388094   .1764688    -1.27   0.205     .4626132    1.179904
pyperstudm~e |   .9709314   .0323588    -0.89   0.376     .9095363    1.036471
        male |   2.258592   1.087355     1.69   0.091     .8791101    5.802727
         age |   .9449023   .0462991    -1.16   0.247     .8583789    1.040147
       Asian |  (omitted)
       Black |   9.16e-07    .001733    -0.01   0.994            0           .
      Latino |    8.53678   16.13798     1.13   0.257     .2099798    347.0649
       Other |   6.09e-06   .0136941    -0.01   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |    .405781   1072.616    -0.00   1.000            0           .
  LatinoMale |   .2955994   .6443993    -0.56   0.576      .004122    21.19833
   OtherMale |   .2071425   629.8468    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9743611   .0195622    -1.29   0.196     .9367644    1.013467
       exper |   1.088021   .0348956     2.63   0.009     1.021732     1.15861
pyperstudlep |   1.115996   .0646659     1.89   0.058     .9961855    1.250217
pyperstude~s |   1.037605   .0116018     3.30   0.001     1.015113    1.060595
pyperstudw~e |    1.16249   .1990683     0.88   0.379     .8310497    1.626116
pyperstudb~k |   1.109387   .2063724     0.56   0.577     .7704407    1.597448
pyperstudl~o |   1.124319    .189487     0.70   0.487     .8080392    1.564396
pyperstudm~e |   1.005583   .0179979     0.31   0.756     .9709193    1.041484
        male |   2.344782   .6801394     2.94   0.003     1.328002    4.140057
         age |   .9346889   .0276424    -2.28   0.022     .8820511     .990468
       Asian |  (omitted)
       Black |   1.557854   2.189151     0.32   0.752     .0991719    24.47174
      Latino |   2.15e-07   .0002723    -0.01   0.990            0           .
       Other |   1.573485   2.345915     0.30   0.761     .0846842     29.2363
   AsianMale |  (omitted)
   BlackMale |   1.120747   2.105265     0.06   0.952     .0282208    44.50873
  LatinoMale |    3992504   5.06e+09     0.01   0.990            0           .
   OtherMale |   .2736107   .5737759    -0.62   0.537     .0044887    16.67812
------------------------------------------------------------------------------


--------->  region = 15

note: Black omitted because of collinearity
```

```
note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -304.55879
Iteration 1:   log likelihood = -266.38427
Iteration 2:   log likelihood = -264.18073
Iteration 3:   log likelihood = -264.12439
Iteration 4:   log likelihood = -264.11616
Iteration 5:   log likelihood = -264.11472
Iteration 6:   log likelihood = -264.11457
Iteration 7:   log likelihood = -264.11454
Iteration 8:   log likelihood = -264.11453

Multinomial logistic regression                 Number of obs   =        317
                                                LR chi2(26)     =      80.89
                                                Prob > chi2     =     0.0000
Log likelihood = -264.11453                     Pseudo R2       =     0.1328

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.003922   .0290879     0.14   0.893     .9484996    1.062583
       exper |   1.161515   .0698798     2.49   0.013      1.03232    1.306879
pyperstudlep |   .9905586   .0268216    -0.35   0.726     .9393597    1.044548
pyperstude~s |   .9960324   .0159036    -0.25   0.803     .9653447    1.027696
pyperstudw~e |   1.171625   .4214659     0.44   0.660      .578879    2.371315
pyperstudb~k |   1.315526    .523183     0.69   0.490     .6033614    2.868278
pyperstudl~o |    1.20495   .4372258     0.51   0.607     .5917029    2.453773
pyperstudm~e |   1.004458   .0212686     0.21   0.834     .9636259    1.047021
        male |   1.904801   .8884565     1.38   0.167     .7635259    4.751991
         age |    .842325   .0469146    -3.08   0.002     .7552152    .9394824
       Asian |   1.36e-06   .0020879    -0.01   0.993            0           .
       Black |  (omitted)
      Latino |   .3619193   .3253875    -1.13   0.258     .0621341    2.108112
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |    2.94683   2.951733     1.08   0.281     .4137495    20.98808
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.002062   .0195445     0.11   0.916     .9644785     1.04111
       exper |   1.065999   .0328658     2.07   0.038     1.003491    1.132401
pyperstudlep |   1.014404   .0217562     0.67   0.505      .972647    1.057955
pyperstude~s |   1.040616   .0107682     3.85   0.000     1.019724    1.061937
pyperstudw~e |   .9745308   .2153882    -0.12   0.907     .6319246    1.502885
pyperstudb~k |   .9020477   .2145652    -0.43   0.665     .5659249    1.437806
pyperstudl~o |   .9361023   .2071754    -0.30   0.765     .6066496    1.444471
pyperstudm~e |   1.017988   .0164248     1.10   0.269     .9862992    1.050694
        male |   2.557987    .794926     3.02   0.003      1.39116    4.703485
         age |   .9794432   .0267174    -0.76   0.446     .9284533    1.033233
       Asian |   .0000106   .0094556    -0.01   0.990            0           .
       Black |  (omitted)
      Latino |   .9723297   .5988142    -0.05   0.964     .2908016      3.2511
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   1.568701   1.120752     0.63   0.529     .3867252    6.363232
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 16
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -456.51647
Iteration 1:   log likelihood = -409.76386
Iteration 2:   log likelihood = -405.95285
Iteration 3:   log likelihood = -405.44912
Iteration 4:   log likelihood = -405.34785
Iteration 5:   log likelihood = -405.32614
Iteration 6:   log likelihood = -405.32248
Iteration 7:   log likelihood = -405.32162
Iteration 8:   log likelihood = -405.32142
Iteration 9:   log likelihood = -405.32138
Iteration 10:  log likelihood = -405.32137

Multinomial logistic regression                 Number of obs   =        433
                                                LR chi2(34)     =     102.39
                                                Prob > chi2     =     0.0000
Log likelihood = -405.32137                     Pseudo R2       =     0.1121

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.065205   .0266882     2.52   0.012     1.014161    1.118818
       exper |   .9569374   .0300903    -1.40   0.162     .8997421    1.017769
pyperstudlep |   .9915916   .0232453    -0.36   0.719     .9470624    1.038214
pyperstude~s |   .9856656   .0103111    -1.38   0.168     .9656619    1.006084
pyperstudw~e |   .9110006   .0339999    -2.50   0.013      .846741    .9801369
pyperstudb~k |   .9391998    .040494    -1.45   0.146     .8630938    1.022017
pyperstudl~o |   .9260634   .0331613    -2.15   0.032     .8632969    .9933935
pyperstudm~e |   1.002193   .0105451     0.21   0.835     .9817368    1.023076
        male |   .9301997   .2855393    -0.24   0.814     .5096671    1.697719
         age |    .965588   .0263951    -1.28   0.200      .915216    1.018732
       Asian |   1.95e+08   2.00e+12     0.00   0.999            0           .
       Black |   .6048325   .6169054    -0.49   0.622      .08193    4.465059
      Latino |   3.207425   2.175988     1.72   0.086     .8485603    12.12357
       Other |   7.79e-08   .0003227    -0.00   0.997            0           .
   AsianMale |  (omitted)
   BlackMale |   1.219175    1.97546     0.12   0.903     .0509147     29.1937
  LatinoMale |   1.271679   1.443242     0.21   0.832     .1375118    11.76021
   OtherMale |   2.42e+07   1.00e+11     0.00   0.997            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.032041   .0170111     1.91   0.056      .999233    1.065927
       exper |    1.01816   .0239431     0.77   0.444     .9722975    1.066186
pyperstudlep |   1.017357   .0190185     0.92   0.357     .9807562    1.055324
pyperstude~s |   1.021227   .0080293     2.67   0.008     1.005611    1.037086
pyperstudw~e |   1.008374    .042717     0.20   0.844     .9280319    1.095672
pyperstudb~k |   .9742139   .0486961    -0.52   0.601     .8832975    1.074488
pyperstudl~o |   .9902533   .0410751    -0.24   0.813     .9129333    1.074122
pyperstudm~e |   1.001591   .0101761     0.16   0.876     .9818435    1.021736
        male |    1.24814   .3064997     0.90   0.367     .7713257    2.019709
         age |   1.013823   .0228811     0.61   0.543      .969954    1.059675
       Asian |   3.126479    47288.3     0.00   1.000            0           .
       Black |   1.55e-07   .0002798    -0.01   0.993            0           .
      Latino |   .4478374   .4137675    -0.87   0.385     .0732277    2.738832
       Other |   5.82e-08   .0001939    -0.00   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   .7255227   2041.138    -0.00   1.000            0           .
  LatinoMale |    1.30582   2.038634     0.17   0.864     .0612344    27.84654
   OtherMale |   1.414049   5665.367     0.00   1.000            0           .
------------------------------------------------------------------------------


--------->  region = 17
```

```
Iteration 0:   log likelihood =  -438.2734
Iteration 1:   log likelihood = -391.38241
Iteration 2:   log likelihood =  -388.1882
Iteration 3:   log likelihood = -387.85079
Iteration 4:   log likelihood = -387.79017
Iteration 5:   log likelihood = -387.77686
Iteration 6:   log likelihood = -387.77372
Iteration 7:   log likelihood = -387.77302
Iteration 8:   log likelihood = -387.77287
Iteration 9:   log likelihood = -387.77284

Multinomial logistic regression                 Number of obs   =        437
                                                LR chi2(36)     =     101.00
                                                Prob > chi2     =     0.0000
Log likelihood = -387.77284                     Pseudo R2       =     0.1152

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9688253   .0209404    -1.47   0.143     .9286401    1.010749
       exper |   1.014381   .0340368     0.43   0.670      .949816    1.083334
pyperstudlep |   .9661295   .0430724    -0.77   0.440     .8852924    1.054348
pyperstude~s |   .9770896   .0135234    -1.67   0.094     .9509405    1.003958
pyperstudw~e |   .8975883   .0834991    -1.16   0.245     .7479857    1.077112
pyperstudb~k |   .9277928   .0862059    -0.81   0.420     .7733242    1.113116
pyperstudl~o |   .9064852   .0825253    -1.08   0.281     .7583476     1.08356
pyperstudm~e |    .995967   .0128978    -0.31   0.755      .971006     1.02157
        male |   2.371442   .8795281     2.33   0.020     1.146347    4.905789
         age |   1.025166   .0330347     0.77   0.441     .9624211    1.092001
       Asian |   7.38e-07   .0026622    -0.00   0.997            0           .
       Black |   1.28e-06    .001169    -0.01   0.988            0           .
      Latino |    1.00286    1.14868     0.00   0.998     .1062357    9.466944
       Other |    2.02215   8641.348     0.00   1.000            0           .
   AsianMale |    1074987   6.01e+09     0.00   0.998            0           .
   BlackMale |   5.21e+12   8.05e+15     0.02   0.985            0           .
  LatinoMale |   4.406649   5.865248     1.11   0.265     .3244587    59.84907
   OtherMale |   8.86e-07   .0039804    -0.00   0.998            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9870815   .0154038    -0.83   0.405     .9573476    1.017739
       exper |   1.044411   .0265619     1.71   0.088     .9936273    1.097791
pyperstudlep |   1.032532   .0231991     1.42   0.154      .988049    1.079017
pyperstude~s |   1.030117    .010294     2.97   0.003     1.010138    1.050492
pyperstudw~e |   1.028924   .1079699     0.27   0.786     .8376501    1.263875
pyperstudb~k |   .9997595   .1055274    -0.00   0.998     .8129219    1.229539
pyperstudl~o |   1.008837   .1050666     0.08   0.933     .8225674    1.237287
pyperstudm~e |   .9859979   .0114236    -1.22   0.224     .9638603    1.008644
        male |   2.468169   .6186538     3.60   0.000     1.510145    4.033955
         age |   1.007176   .0236702     0.30   0.761     .9618355    1.054654
       Asian |   4.95e-07   .0010407    -0.01   0.994            0           .
       Black |    5.23977   5.022011     1.73   0.084     .8007293    34.28773
      Latino |   1.198021   .7766835     0.28   0.780     .3362219    4.268772
       Other |    8142411   1.72e+10     0.01   0.994            0           .
   AsianMale |   8.71e+12   2.59e+16     0.01   0.992            0           .
   BlackMale |   859857.5   1.07e+09     0.01   0.991            0           .
  LatinoMale |   1.836261   1.662552     0.67   0.502     .3113553    10.82961
   OtherMale |   3.35e-07   .0007078    -0.01   0.994            0           .
------------------------------------------------------------------------------


---------->  region = 18

note: Asian omitted because of collinearity
```

```
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -421.87448
Iteration 1:   log likelihood = -383.16631
Iteration 2:   log likelihood = -381.72284
Iteration 3:   log likelihood = -381.59844
Iteration 4:   log likelihood = -381.57365
Iteration 5:   log likelihood = -381.56841
Iteration 6:   log likelihood = -381.56724
Iteration 7:   log likelihood = -381.56695
Iteration 8:   log likelihood = -381.56689
Iteration 9:   log likelihood = -381.56688

Multinomial logistic regression                 Number of obs   =        412
                                                LR chi2(30)     =      80.62
                                                Prob > chi2     =     0.0000
Log likelihood = -381.56688                     Pseudo R2       =     0.0955

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.006077   .0240785     0.25   0.800     .9599743    1.054395
       exper |   .9335113   .0325175    -1.98   0.048     .8719051    .9994705
pyperstudlep |   .9629601   .0186494    -1.95   0.051     .9270929    1.000215
pyperstude~s |   1.041769   .0145954     2.92   0.003     1.013551    1.070771
pyperstudw~e |   .9860825   .1621441    -0.09   0.932     .7144108    1.361064
pyperstudb~k |   .9761331   .1672835    -0.14   0.888     .6976467    1.365786
pyperstudl~o |   .9647115   .1582219    -0.22   0.827     .6995073    1.330463
pyperstudm~e |   .9899006   .0132094    -0.76   0.447     .9643463    1.016132
        male |   1.115129    .385784     0.31   0.753     .5660413    2.196859
         age |   .9825003   .0298144    -0.58   0.561     .9257689    1.042708
       Asian |  (omitted)
       Black |   1.722522   2.517334     0.37   0.710     .0982198    30.20861
      Latino |   1.913542   1.146786     1.08   0.279     .5911708    6.193884
       Other |   3.99e-06   .0041637    -0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   1.20e-06   .0007805    -0.02   0.983            0           .
  LatinoMale |   1.050007   .7916111     0.06   0.948     .2395865    4.601737
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9911056   .0155683    -0.57   0.570     .9610573    1.022093
       exper |   1.049328   .0295143     1.71   0.087     .9930468    1.108799
pyperstudlep |   .9733081   .0137433    -1.92   0.055      .946741    1.000621
pyperstude~s |   1.059419    .011866     5.15   0.000     1.036416    1.082933
pyperstudw~e |   1.179092   .1878376     1.03   0.301     .8628698    1.611202
pyperstudb~k |   1.165709   .1943114     0.92   0.358     .8408215    1.616131
pyperstudl~o |   1.139188   .1809808     0.82   0.412     .8343854    1.555337
pyperstudm~e |    .977098    .011039    -2.05   0.040     .9556998    .9989753
        male |      1.462    .396902     1.40   0.162     .8587451    2.489033
         age |    .981271    .025533    -0.73   0.467      .932482    1.032613
       Asian |  (omitted)
       Black |   1.499602   1.915556     0.32   0.751     .1226511    18.33499
      Latino |   2.036284   1.053467     1.37   0.169     .7387054    5.613135
       Other |   6.563813   8.593579     1.44   0.151     .5043509    85.42395
   AsianMale |  (omitted)
   BlackMale |   .6306238   1.029501    -0.28   0.778     .0257142    15.46563
  LatinoMale |   .3337068   .2262747    -1.62   0.106     .0883478    1.260476
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 19
```

```
Iteration 0:   log likelihood = -744.23789
Iteration 1:   log likelihood = -683.39139
Iteration 2:   log likelihood = -680.91929
Iteration 3:   log likelihood = -680.80175
Iteration 4:   log likelihood = -680.77568
Iteration 5:   log likelihood = -680.77031
Iteration 6:   log likelihood = -680.76933
Iteration 7:   log likelihood = -680.76923
Iteration 8:   log likelihood = -680.76921

Multinomial logistic regression                 Number of obs   =        695
                                                LR chi2(36)     =     126.94
                                                Prob > chi2     =     0.0000
Log likelihood = -680.76921                     Pseudo R2       =     0.0853

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.022864   .0142593     1.62   0.105     .9952944    1.051197
       exper |   1.042172   .0200615     2.15   0.032     1.003585    1.082243
pyperstudlep |   1.006607   .0057512     1.15   0.249      .995398    1.017943
pyperstude~s |   1.009372   .0080215     1.17   0.240     .9937719    1.025217
pyperstudw~e |   .9083585   .1037841    -0.84   0.400     .7261119    1.136347
pyperstudb~k |   .8995515   .1131085    -0.84   0.400     .7030674    1.150946
pyperstudl~o |   .8977359   .0999745    -0.97   0.333     .7216994    1.116711
pyperstudm~e |    .991445   .0084082    -1.01   0.311     .9751014    1.008063
        male |   1.152545   .3144841     0.52   0.603     .6751474    1.967512
         age |   .9743821   .0157451    -1.61   0.108     .9440059    1.005736
       Asian |    2839825   4.27e+09     0.01   0.992            0           .
       Black |   1.264409    .895191     0.33   0.740     .3156779    5.064436
      Latino |   1.402051   .3665419     1.29   0.196     .8399085     2.34043
       Other |   1.35e-06   .0012848    -0.01   0.989            0           .
   AsianMale |   4.29e-07   .0010196    -0.01   0.995            0           .
   BlackMale |   .6441969   .6634813    -0.43   0.669     .0855728     4.84955
  LatinoMale |   1.253679   .4655869     0.61   0.543     .6054388    2.595987
   OtherMale |    2257873   8.42e+09     0.00   0.997            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.041352   .0158292     2.67   0.008     1.010784    1.072843
       exper |   1.144909   .0301082     5.15   0.000     1.087393    1.205467
pyperstudlep |   1.011954   .0065556     1.83   0.067     .9991866    1.024885
pyperstude~s |   1.026073   .0101545     2.60   0.009     1.006363     1.04617
pyperstudw~e |   .9274487   .1132199    -0.62   0.537     .7300926    1.178153
pyperstudb~k |   .8803924   .1183162    -0.95   0.343     .6765237    1.145696
pyperstudl~o |   .9026407   .1072401    -0.86   0.389     .7151319    1.139315
pyperstudm~e |   1.004624   .0080373     0.58   0.564      .988994    1.020501
        male |   .8797797   .2853928    -0.39   0.693     .4658559    1.661484
         age |   .9299255   .0209558    -3.22   0.001     .8897468    .9719186
       Asian |   1.110755   2796.882     0.00   1.000            0           .
       Black |   .3887131   .4424023    -0.83   0.406     .0417695    3.617421
      Latino |   1.123054   .3390942     0.38   0.701     .6214261    2.029607
       Other |   2.21e-06   .0023353    -0.01   0.990            0           .
   AsianMale |   2.79e+07   7.56e+10     0.01   0.995            0           .
   BlackMale |   4.084423   5.604532     1.03   0.305     .2774186     60.1348
  LatinoMale |   1.648477   .7220359     1.14   0.254     .6986426    3.889652
   OtherMale |   1.51e+14   3.93e+17     0.01   0.990            0           .
------------------------------------------------------------------------------


---------->  region = 20

Iteration 0:   log likelihood = -2004.6366
Iteration 1:   log likelihood = -1884.9031
Iteration 2:   log likelihood = -1880.0141
```

```
Iteration 3:   log likelihood = -1879.8204
Iteration 4:   log likelihood = -1879.7836
Iteration 5:   log likelihood = -1879.7757
Iteration 6:   log likelihood = -1879.7739
Iteration 7:   log likelihood = -1879.7735
Iteration 8:   log likelihood = -1879.7734
Iteration 9:   log likelihood = -1879.7733

Multinomial logistic regression                 Number of obs   =       2048
                                                LR chi2(36)     =     249.73
                                                Prob > chi2     =     0.0000
Log likelihood = -1879.7733                     Pseudo R2       =     0.0623

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.000904   .0088376     0.10   0.918     .9837317    1.018376
       exper |   1.011993   .0120944     1.00   0.319     .9885635    1.035977
pyperstudlep |   .9752532   .0070375    -3.47   0.001      .961557    .9891445
pyperstude~s |    1.01315   .0057775     2.29   0.022      1.00189    1.024538
pyperstudw~e |   .9357022   .0421799    -1.47   0.140     .8565779    1.022135
pyperstudb~k |   .9308439   .0440153    -1.52   0.130     .8484523    1.021236
pyperstudl~o |   .9267641   .0421093    -1.67   0.094     .8477997    1.013083
pyperstudm~e |   .9854603   .0056638    -2.55   0.011     .9744218    .9966238
        male |    1.73612   .2591064     3.70   0.000     1.295814    2.326039
         age |   .9712952   .0101429    -2.79   0.005     .9516176    .9913797
       Asian |   1.02e-06   .0010094    -0.01   0.989            0           .
       Black |   1.343932   .4322819     0.92   0.358     .7154584     2.52447
      Latino |   1.744471   .3064782     3.17   0.002     1.236289    2.461543
       Other |    1.12765   1.309889     0.10   0.918     .1157203     10.9885
   AsianMale |   2.69e+13   1.00e+17     0.01   0.993            0           .
   BlackMale |   .9641619   .4580753    -0.08   0.939     .3799639     2.44657
  LatinoMale |    .914876   .2283947    -0.36   0.722     .5608718    1.492316
   OtherMale |   .6511142   1.070285    -0.26   0.794     .0259701    16.32451
-------------+----------------------------------------------------------------
3            |
      tenure |   1.035706   .0092516     3.93   0.000     1.017731    1.053999
       exper |   1.077713   .0158415     5.09   0.000     1.047107    1.109213
pyperstudlep |   1.009721   .0060714     1.61   0.108     .9978912    1.021691
pyperstude~s |   1.042997   .0064487     6.81   0.000     1.030434    1.055713
pyperstudw~e |   1.114564   .0615577     1.96   0.050     1.000214    1.241987
pyperstudb~k |   1.068377    .061698     1.15   0.252     .9540441    1.196413
pyperstudl~o |   1.064353   .0591947     1.12   0.262      .954433    1.186932
pyperstudm~e |   1.004377   .0047549     0.92   0.356     .9951006     1.01374
        male |   1.542055   .2472444     2.70   0.007      1.12622     2.11143
         age |   .9518982   .0123852    -3.79   0.000     .9279306    .9764848
       Asian |   1.022331   1.177671     0.02   0.985     .1069184    9.775309
       Black |   1.108162    .355257     0.32   0.749     .5911845    2.077224
      Latino |   1.068972   .1953692     0.36   0.715     .7471324    1.529449
       Other |   1.34e-06   .0015247    -0.01   0.990            0           .
   AsianMale |    .794321   5554.843    -0.00   1.000            0           .
   BlackMale |   1.025192   .5059568     0.05   0.960     .3896881    2.697078
  LatinoMale |   .9869801   .2636709    -0.05   0.961     .5846698     1.66612
   OtherMale |    1344685   1.53e+09     0.01   0.990            0           .
------------------------------------------------------------------------------
by pyschooltype

. bysort pyschooltype: mlogit admin  tenure exper  pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile male age A
> sian Black Latino Other AsianMale BlackMale LatinoMale OtherMale if validcert1998a==1,
rrr


--------->  pyschooltype =
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -350.10119
Iteration 1:   log likelihood = -317.01174
Iteration 2:   log likelihood = -316.23251
Iteration 3:   log likelihood = -316.11336
Iteration 4:   log likelihood = -316.09383
Iteration 5:   log likelihood = -316.08945
Iteration 6:   log likelihood = -316.08836
Iteration 7:   log likelihood = -316.08815
Iteration 8:   log likelihood =  -316.0881
Iteration 9:   log likelihood = -316.08809

Multinomial logistic regression                 Number of obs   =        323
                                                LR chi2(34)     =      68.03
                                                Prob > chi2     =     0.0005
Log likelihood = -316.08809                     Pseudo R2       =     0.0972

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    .976387   .0238563    -0.98   0.328     .9307313    1.024282
       exper |   1.025689   .0306379     0.85   0.396     .9673635    1.087531
pyperstudlep |   .9978431   .0119865    -0.18   0.857     .9746244    1.021615
pyperstude~s |   .9812822   .0112357    -1.65   0.099     .9595058    1.003553
pyperstudw~e |   .8907664    .041184    -2.50   0.012     .8135966    .9752558
pyperstudb~k |   .8945075   .0437632    -2.28   0.023     .8127174    .9845289
pyperstudl~o |   .9085424   .0422479    -2.06   0.039     .8293994    .9952375
pyperstudm~e |   1.006451   .0120032     0.54   0.590     .9831984    1.030254
        male |   2.239325   .8258581     2.19   0.029     1.086916    4.613584
         age |   .9490397   .0241616    -2.05   0.040     .9028459     .997597
       Asian |   3.71e+07   1.15e+11     0.01   0.996            0           .
       Black |   2.422131   1.649749     1.30   0.194     .6374293    9.203719
      Latino |   1.614308   .8674048     0.89   0.373     .5631395    4.627608
       Other |   4.10e-07   .0004844    -0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   .5394981   .5609684    -0.59   0.553     .0702932    4.140631
  LatinoMale |    .480859   .3765438    -0.94   0.350     .1036267     2.23133
   OtherMale |   4.11e+13   1.37e+17     0.01   0.992            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.021138   .0215835     0.99   0.322     .9796991    1.064329
       exper |   1.057017   .0303394     1.93   0.053     .9991944    1.118185
pyperstudlep |   1.003145   .0112326     0.28   0.779      .981369    1.025404
pyperstude~s |   .9948898    .010873    -0.47   0.639     .9738056     1.01643
pyperstudw~e |   .9496246   .0447705    -1.10   0.273     .8658081    1.041555
pyperstudb~k |   .9340106   .0469519    -1.36   0.174     .8463746    1.030721
pyperstudl~o |   .9503869   .0455726    -1.06   0.289     .8651351     1.04404
pyperstudm~e |   .9944982   .0137509    -0.40   0.690      .967909    1.021818
        male |   1.835413   .6248911     1.78   0.074     .9417392    3.577147
         age |   .9752813   .0244893    -1.00   0.319     .9284452     1.02448
       Asian |   3.061156   14338.96     0.00   1.000            0           .
       Black |   .4823815   .4238206    -0.83   0.407     .0862034    2.699335
      Latino |    1.84589   .8975943     1.26   0.207     .7116972    4.787585
       Other |   1.08e-06   .0012189    -0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   2.392877   2.859932     0.73   0.465     .2299198    24.90372
  LatinoMale |   .3012749   .2350392    -1.54   0.124     .0652979    1.390038
   OtherMale |   530243.9   2.55e+09     0.00   0.998            0           .
------------------------------------------------------------------------------


---------->  pyschooltype = Both Elem/Sec
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -657.8572
Iteration 1:   log likelihood = -604.87383
Iteration 2:   log likelihood =  -598.6686
Iteration 3:   log likelihood = -598.53312
Iteration 4:   log likelihood = -598.50376
Iteration 5:   log likelihood =  -598.4972
Iteration 6:   log likelihood = -598.49576
Iteration 7:   log likelihood = -598.49554
Iteration 8:   log likelihood = -598.49552

Multinomial logistic regression                 Number of obs   =        687
                                                LR chi2(34)     =     118.72
                                                Prob > chi2     =     0.0000
Log likelihood = -598.49552                     Pseudo R2       =     0.0902

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.018131   .0198924     0.92   0.358     .9798801    1.057876
       exper |   .9667455   .0238096    -1.37   0.170     .9211879    1.014556
pyperstudlep |    1.03149   .0121054     2.64   0.008     1.008035    1.055491
pyperstude~s |   .9815044   .0078017    -2.35   0.019     .9663318    .9969153
pyperstudw~e |   .9203994    .036216    -2.11   0.035     .8520855    .9941903
pyperstudb~k |   .9421267   .0399139    -1.41   0.159     .8670568    1.023696
pyperstudl~o |   .9246973   .0385948    -1.88   0.061     .8520643    1.003522
pyperstudm~e |   .9958653    .004745    -0.87   0.385     .9866086    1.005209
        male |   1.865345   .5800371     2.00   0.045     1.014085    3.431183
         age |   .9837192   .0214669    -0.75   0.452     .9425319    1.026706
       Asian |   1.233054   3062.639     0.00   1.000            0           .
       Black |   1.478746   .8317106     0.70   0.487     .4910673    4.452932
      Latino |   2.868402   2.139305     1.41   0.158     .6649651    12.37318
       Other |   9.65e-07     .00077    -0.02   0.986            0           .
   AsianMale |  (omitted)
   BlackMale |   2.005486   1.456337     0.96   0.338     .4831667    8.324196
  LatinoMale |   .8781417    .783266    -0.15   0.884     .1528721    5.044302
   OtherMale |   1.16e+07   9.29e+09     0.02   0.984            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.011557   .0118615     0.98   0.327     .9885741    1.035074
       exper |   1.026848   .0177925     1.53   0.126     .9925608    1.062319
pyperstudlep |   .9928341   .0103395    -0.69   0.490     .9727745    1.013307
pyperstude~s |   1.011248   .0054972     2.06   0.040      1.00053     1.02208
pyperstudw~e |   1.086139   .0444507     2.02   0.043      1.00242     1.17685
pyperstudb~k |   1.087534   .0465748     1.96   0.050     .9999751    1.182759
pyperstudl~o |   1.080752   .0455338     1.84   0.065     .9950929    1.173785
pyperstudm~e |   .9977135   .0034559    -0.66   0.509     .9909629     1.00451
        male |   1.443435   .2820795     1.88   0.060     .9841324    2.117099
         age |   .9720132   .0157965    -1.75   0.081     .9415405    1.003472
       Asian |    3488767   3.77e+09     0.01   0.989            0           .
       Black |   .2603918   .1753921    -2.00   0.046     .0695479    .9749244
      Latino |   .6937551   .4462051    -0.57   0.570     .1966689    2.447241
       Other |   1.82e-06   .0012987    -0.02   0.985            0           .
   AsianMale |  (omitted)
   BlackMale |   6.588649   5.378276     2.31   0.021     1.330349    32.63077
  LatinoMale |   2.193963   1.624592     1.06   0.289     .5139597    9.365466
   OtherMale |    3269330   2.33e+09     0.02   0.983            0           .
------------------------------------------------------------------------------


---------> pyschooltype = Elementary

Iteration 0:   log likelihood = -8943.5202
Iteration 1:   log likelihood = -8446.1878
```

```
Iteration 2:   log likelihood = -8440.4106
Iteration 3:   log likelihood = -8440.1597
Iteration 4:   log likelihood = -8440.1425
Iteration 5:   log likelihood = -8440.1385
Iteration 6:   log likelihood = -8440.1378
Iteration 7:   log likelihood = -8440.1377
Iteration 8:   log likelihood = -8440.1377

Multinomial logistic regression                 Number of obs   =       8455
                                                LR chi2(36)     =    1006.76
                                                Prob > chi2     =     0.0000
Log likelihood = -8440.1377                     Pseudo R2       =     0.0563

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9922569   .0048489    -1.59   0.112     .9827986    1.001806
       exper |   .9930642   .0059449    -1.16   0.245     .9814806    1.004785
pyperstudlep |   1.007963   .0023071     3.47   0.001     1.003451    1.012495
pyperstude~s |   .9862789   .0023482    -5.80   0.000     .9816873     .990892
pyperstudw~e |    .976711   .0071978    -3.20   0.001     .9627049    .9909208
pyperstudb~k |   .9806881   .0077209    -2.48   0.013     .9656716    .9959381
pyperstudl~o |   .9832338   .0073977    -2.25   0.025     .9688409    .9978405
pyperstudm~e |   1.010068   .0039648     2.55   0.011     1.002327    1.017869
        male |   1.673942    .156841     5.50   0.000     1.393114    2.011381
         age |    .993931   .0048602    -1.24   0.213     .9844507    1.003503
       Asian |   .8850366   .4775337    -0.23   0.821     .3073858    2.548231
       Black |   1.255977    .144062     1.99   0.047     1.003109     1.57259
      Latino |   1.045414   .1050087     0.44   0.658     .8585938    1.272884
       Other |   .7077082   .3105363    -0.79   0.431     .2994707    1.672454
   AsianMale |   5.441915   7.043114     1.31   0.191     .4306231    68.77114
   BlackMale |   .8059508   .1768317    -0.98   0.325     .5242621    1.238992
  LatinoMale |   .8747093   .1514446    -0.77   0.439     .6230016    1.228113
   OtherMale |   9.68e-07    .000534    -0.03   0.980            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.008341   .0039019     2.15   0.032     1.000723    1.016018
       exper |   1.052094   .0057564     9.28   0.000     1.040872    1.063437
pyperstudlep |    1.00036   .0020279     0.18   0.859     .9963937    1.004343
pyperstude~s |   1.004869   .0020937     2.33   0.020     1.000774    1.008981
pyperstudw~e |   1.005911   .0074686     0.79   0.427     .9913792    1.020656
pyperstudb~k |   .9946445   .0078311    -0.68   0.495     .9794135    1.010112
pyperstudl~o |   .9976277   .0075845    -0.31   0.755     .9828726    1.012604
pyperstudm~e |   .9987684   .0037221    -0.33   0.741     .9914997     1.00609
        male |     2.8833   .2185236    13.97   0.000     2.485294    3.345044
         age |   1.003037   .0047094     0.65   0.518      .993849     1.01231
       Asian |   .5639392   .3373512    -0.96   0.338      .174598    1.821483
       Black |   1.050227   .1120115     0.46   0.646     .8521156    1.294397
      Latino |   1.183703   .1060916     1.88   0.060     .9930064     1.41102
       Other |   .5008255   .2227847    -1.55   0.120     .2094316    1.197652
   AsianMale |   5.355743   6.638451     1.35   0.176     .4717958    60.79745
   BlackMale |   .5553851   .1092975    -2.99   0.003     .3776428    .8167839
  LatinoMale |   .5237233   .0790207    -4.29   0.000     .3896461    .7039363
   OtherMale |   .8207717   .6340233    -0.26   0.798     .1805896     3.73037
------------------------------------------------------------------------------


---------->  pyschooltype = Middle

Iteration 0:   log likelihood = -5135.6405
Iteration 1:   log likelihood = -4874.6318
Iteration 2:   log likelihood = -4869.5082
Iteration 3:   log likelihood = -4869.1342
Iteration 4:   log likelihood =  -4869.071
```

```
Iteration 5:   log likelihood =  -4869.057
Iteration 6:   log likelihood = -4869.0535
Iteration 7:   log likelihood = -4869.0528
Iteration 8:   log likelihood = -4869.0526
Iteration 9:   log likelihood = -4869.0526
Iteration 10:  log likelihood = -4869.0526

Multinomial logistic regression                 Number of obs   =       4918
                                                LR chi2(36)     =     533.18
                                                Prob > chi2     =     0.0000
Log likelihood = -4869.0526                     Pseudo R2       =     0.0519

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.006337   .0055262     1.15   0.250      .995564    1.017227
       exper |   1.003285   .0069499     0.47   0.636     .9897559       1.017
pyperstudlep |   1.010892   .0037422     2.93   0.003     1.003584    1.018253
pyperstude~s |   .9931246   .0030039    -2.28   0.023     .9872545    .9990296
pyperstudw~e |   .9846692   .0093174    -1.63   0.103     .9665758    1.003101
pyperstudb~k |   .9864068   .0100605    -1.34   0.180     .9668845    1.006323
pyperstudl~o |   .9839065   .0097338    -1.64   0.101     .9650124    1.003171
pyperstudm~e |   1.008574   .0045048     1.91   0.056     .9997834    1.017442
        male |   1.530024   .1289636     5.05   0.000     1.297035    1.804866
         age |   .9657328    .005643    -5.97   0.000     .9547358    .9768564
       Asian |   .5588788   .6175944    -0.53   0.599     .0640751     4.87468
       Black |   1.169795   .1658721     1.11   0.269     .8859577    1.544567
      Latino |   2.040125   .2875413     5.06   0.000     1.547697    2.689228
       Other |   .8114674   .5582683    -0.30   0.761     .2107011    3.125183
   AsianMale |   5.57e-07   .0004764    -0.02   0.987            0           .
   BlackMale |   1.699391   .3410425     2.64   0.008     1.146753    2.518354
  LatinoMale |   1.011672   .1822931     0.06   0.949     .7106595    1.440182
   OtherMale |   1.649121   1.469579     0.56   0.575      .287556    9.457634
-------------+----------------------------------------------------------------
3            |
      tenure |   1.003515   .0054959     0.64   0.522     .9928006    1.014345
       exper |   1.060257   .0087274     7.11   0.000     1.043289    1.077501
pyperstudlep |   1.001882   .0044537     0.42   0.672     .9931911     1.01065
pyperstude~s |   1.011006   .0034869     3.17   0.002     1.004195    1.017864
pyperstudw~e |   1.037255   .0133719     2.84   0.005     1.011375    1.063797
pyperstudb~k |   1.019422   .0140396     1.40   0.162     .9922731    1.047314
pyperstudl~o |   1.019301   .0136523     1.43   0.153     .9928911    1.046413
pyperstudm~e |   .9999435   .0056445    -0.01   0.992     .9889415    1.011068
        male |   2.260264   .2071175     8.90   0.000     1.888687    2.704945
         age |   .9682615   .0071784    -4.35   0.000     .9542938    .9824336
       Asian |   4.31e-07   .0005636    -0.01   0.991            0           .
       Black |    .978628   .1873952    -0.11   0.910     .6723927    1.424335
      Latino |   1.988037   .3425668     3.99   0.000     1.418242    2.786753
       Other |   .9399014   .7511548    -0.08   0.938     .1962524     4.50142
   AsianMale |    2091090   2.74e+09     0.01   0.991            0           .
   BlackMale |   1.754345   .4343105     2.27   0.023     1.079914    2.849974
  LatinoMale |   .7852549   .1653762    -1.15   0.251     .5196919    1.186521
   OtherMale |   1.180172    1.17851     0.17   0.868     .1667027    8.355032
------------------------------------------------------------------------------


---------->  pyschooltype = Secondary

Iteration 0:   log likelihood = -6053.7907
Iteration 1:   log likelihood = -5753.7091
Iteration 2:   log likelihood = -5740.5649
Iteration 3:   log likelihood = -5740.3551
Iteration 4:   log likelihood = -5740.3107
Iteration 5:   log likelihood = -5740.3004
```

```
Iteration 6:   log likelihood =  -5740.298
Iteration 7:   log likelihood = -5740.2975
Iteration 8:   log likelihood = -5740.2974
Iteration 9:   log likelihood = -5740.2974

Multinomial logistic regression                 Number of obs   =       6392
                                                LR chi2(36)     =     626.99
                                                Prob > chi2     =     0.0000
Log likelihood = -5740.2974                     Pseudo R2       =     0.0518

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9978515   .0043409    -0.49   0.621     .9893797    1.006396
       exper |   .9996235   .0058122    -0.06   0.948     .9882965     1.01108
pyperstudlep |   1.011217   .0038386     2.94   0.003     1.003722    1.018769
pyperstude~s |   .9951173   .0023484    -2.07   0.038     .9905251    .9997308
pyperstudw~e |   .9810787   .0074644    -2.51   0.012     .9665572    .9958183
pyperstudb~k |   .9842037   .0078794    -1.99   0.047     .9688809    .9997687
pyperstudl~o |    .980294   .0076767    -2.54   0.011     .9653628    .9954562
pyperstudm~e |   .9996487   .0026152    -0.13   0.893     .9945362    1.004787
        male |   1.283617   .0955315     3.35   0.001     1.109394      1.4852
         age |   .9808962    .005279    -3.58   0.000     .9706039    .9912977
       Asian |   1.549011   1.078439     0.63   0.530     .3957662    6.062762
       Black |   1.854265   .2585743     4.43   0.000     1.410825    2.437084
      Latino |   1.813825    .256455     4.21   0.000     1.374817    2.393018
       Other |   .7571792   .4248201    -0.50   0.620     .2521313    2.273896
   AsianMale |   1.461202   1.308913     0.42   0.672     .2524772     8.45665
   BlackMale |   1.426686   .2631938     1.93   0.054     .9938007    2.048129
  LatinoMale |    1.45167   .2436385     2.22   0.026     1.044739    2.017102
   OtherMale |   2.324188   1.626551     1.21   0.228     .5896168    9.161631
-------------+----------------------------------------------------------------
3            |
      tenure |   .9783483   .0048513    -4.41   0.000     .9688859     .987903
       exper |   1.052563    .007999     6.74   0.000     1.037002    1.068358
pyperstudlep |   .9982822   .0051023    -0.34   0.737     .9883317    1.008333
pyperstude~s |   1.019285   .0029103     6.69   0.000     1.013597    1.025005
pyperstudw~e |   1.052808   .0144824     3.74   0.000     1.024802    1.081579
pyperstudb~k |   1.035584   .0148568     2.44   0.015      1.00687    1.065116
pyperstudl~o |   1.032081   .0144883     2.25   0.024     1.004071    1.060872
pyperstudm~e |   1.018841    .002543     7.48   0.000     1.013869    1.023837
        male |   2.308505   .2230171     8.66   0.000     1.910289    2.789733
         age |   .9829839   .0073253    -2.30   0.021     .9687309    .9974466
       Asian |   1.38e-06   .0010794    -0.02   0.986            0           .
       Black |   1.278673   .2982891     1.05   0.292     .8094515    2.019891
      Latino |   1.420314   .3000277     1.66   0.097     .9388066    2.148783
       Other |   .8002782   .6259356    -0.28   0.776      .172773     3.70686
   AsianMale |    1701556   1.33e+09     0.02   0.985            0           .
   BlackMale |   .8863349    .263988    -0.41   0.685      .494395    1.588992
  LatinoMale |   1.059658   .2550397     0.24   0.810     .6611466    1.698376
   OtherMale |    1.39135   1.313959     0.35   0.727     .2185652    8.857099
------------------------------------------------------------------------------
```

1998-99

```
. mlogit admin  tenure exper  pyperstudlep pyperstudecodis pyperstudwhite pyperstudblack
pyperstudlatino pyperstudmobile male age Asian Black Latino Oth
> er AsianMale BlackMale LatinoMale OtherMale if validcert1999a==1, rrr

Iteration 0:   log likelihood = -22741.443
Iteration 1:   log likelihood = -21704.446
Iteration 2:   log likelihood = -21685.121
Iteration 3:   log likelihood = -21685.091
Iteration 4:   log likelihood = -21685.091
```

```
Multinomial logistic regression                 Number of obs   =      21713
                                                LR chi2(36)     =    2112.70
                                                Prob > chi2     =     0.0000
Log likelihood = -21685.091                     Pseudo R2       =     0.0465

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.002158   .0026402     0.82   0.413     .9969965    1.007346
       exper |     .99396   .0033194    -1.81   0.070     .9874753    1.000487
pyperstudlep |    1.00909   .0015065     6.06   0.000     1.006142    1.012047
pyperstude~s |   .9945443   .0012042    -4.52   0.000     .9921869    .9969073
pyperstudw~e |   .9734326   .0042597    -6.15   0.000     .9651194    .9818175
pyperstudb~k |    .975292   .0045566    -5.35   0.000     .9664019    .9842638
pyperstudl~o |   .9747438   .0043667    -5.71   0.000     .9662226    .9833401
pyperstudm~e |   .9977051   .0014714    -1.56   0.119     .9948253    1.000593
        male |   1.293825   .0550899     6.05   0.000     1.190233    1.406432
         age |    .984028   .0028078    -5.64   0.000     .9785401    .9895467
       Asian |   1.123528   .3997356     0.33   0.743     .5594206     2.25647
       Black |   1.445661    .102137     5.22   0.000     1.258718    1.660368
      Latino |   1.371846   .0899925     4.82   0.000     1.206332    1.560069
       Other |   .7351951   .2185579    -1.03   0.301     .4105428    1.316579
   AsianMale |   1.040541   .5619399     0.07   0.941     .3610535    2.998797
   BlackMale |    1.54516   .1620242     4.15   0.000     1.258106     1.89771
  LatinoMale |   1.271583   .1136908     2.69   0.007     1.067186     1.51513
   OtherMale |   1.413313   .5753701     0.85   0.395     .6363672    3.138837
-------------+----------------------------------------------------------------
3            |
      tenure |   1.003038   .0023707     1.28   0.199     .9984023    1.007695
       exper |   1.053025   .0037237    14.61   0.000     1.045752    1.060348
pyperstudlep |   1.012108   .0015101     8.07   0.000     1.009153    1.015072
pyperstude~s |   1.022798   .0012721    18.12   0.000     1.020308    1.025294
pyperstudw~e |    1.01501   .0052617     2.87   0.004     1.004749    1.025375
pyperstudb~k |   .9937519   .0054981    -1.13   0.257     .9830341    1.004586
pyperstudl~o |   .9892349   .0052683    -2.03   0.042      .978963    .9996146
pyperstudm~e |   1.002256    .001466     1.54   0.123     .9993874    1.005134
        male |   1.458772   .0594008     9.27   0.000     1.346873    1.579967
         age |   .9907014   .0031663    -2.92   0.003     .9845149    .9969267
       Asian |    .508103   .2385526    -1.44   0.149     .2024489    1.275228
       Black |   .9134977   .0725799    -1.14   0.255     .7817667    1.067426
      Latino |    1.26053   .0858313     3.40   0.001     1.103046    1.440498
       Other |   .5451471   .1803445    -1.83   0.067     .2850498    1.042573
   AsianMale |    2.13523   1.321009     1.23   0.220     .6350811    7.178935
   BlackMale |   1.317799   .1586878     2.29   0.022     1.040755     1.66859
  LatinoMale |   1.010024   .0945811     0.11   0.915     .8406653    1.213501
   OtherMale |    1.77502   .7720091     1.32   0.187     .7568158    4.163093
------------------------------------------------------------------------------
. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=21713)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |      1.813    2    0.404
       exper |    270.294    2    0.000
pyperstudlep |     77.015    2    0.000
pyperstude~s |    459.348    2    0.000
pyperstudw~e |     64.854    2    0.000
pyperstudb~k |     28.839    2    0.000
pyperstudl~o |     32.411    2    0.000
pyperstudm~e |      6.801    2    0.033
```

```
        male |     97.105    2    0.000
         age |     34.036    2    0.000
       Asian |      2.891    2    0.236
       Black |     34.605    2    0.000
      Latino |     27.025    2    0.000
       Other |      4.092    2    0.129
   AsianMale |      1.637    2    0.441
   BlackMale |     18.032    2    0.000
  LatinoMale |      8.136    2    0.017
   OtherMale |      2.058    2    0.357
-------------------------------------

**** Wald tests for independent variables (N=21713)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+-------------------------
      tenure |      1.813    2    0.404
       exper |    254.304    2    0.000
pyperstudlep |     75.960    2    0.000
pyperstude~s |    437.272    2    0.000
pyperstudw~e |     65.456    2    0.000
pyperstudb~k |     29.143    2    0.000
pyperstudl~o |     32.623    2    0.000
pyperstudm~e |      6.780    2    0.034
        male |     96.805    2    0.000
         age |     33.739    2    0.000
       Asian |      2.527    2    0.283
       Black |     35.263    2    0.000
      Latino |     27.055    2    0.000
       Other |      3.831    2    0.147
   AsianMale |      1.584    2    0.453
   BlackMale |     17.884    2    0.000
  LatinoMale |      8.139    2    0.017
   OtherMale |      2.025    2    0.363
-------------------------------------

**** Hausman tests of IIA assumption (N=21713)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+--------------------------------
       2 |  -115.910   18     ---    ---
       3 |   -11.867   18     ---    ---
-----------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=21713)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+------------------------------------------------------
       2 |  -4883.874  -4876.829  14.090   19    0.778   for Ho
       3 |  -4982.943  -4971.622  22.642   19    0.253   for Ho
-------------------------------------------------------------------

**** Wald tests for combining alternatives (N=21713)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
```

```
       2-       3  | 1374.163   18    0.000
       2-       1  |  491.770   18    0.000
       3-       1  | 1161.536   18    0.000
-------------------------------------------

**** LR tests for combining alternatives (N=21713)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1538.047   18    0.000
       2-       1  |  503.417   18    0.000
       3-       1  | 1281.840   18    0.000
-------------------------------------------
by region
. bysort region: mlogit admin  tenure exper  pyperstudlep pyperstudecodis pyperstudwhite
pyperstudblack pyperstudlatino pyperstudmobile male age Asian B
> lack Latino Other AsianMale BlackMale LatinoMale OtherMale if validcert1999a==1, rrr


---------->  region = 1

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1566.0138
Iteration 1:   log likelihood = -1474.5074
Iteration 2:   log likelihood = -1470.9544
Iteration 3:   log likelihood = -1470.8095
Iteration 4:   log likelihood = -1470.7763
Iteration 5:   log likelihood =  -1470.769
Iteration 6:   log likelihood = -1470.7674
Iteration 7:   log likelihood = -1470.7671
Iteration 8:   log likelihood = -1470.7671

Multinomial logistic regression                 Number of obs   =       1472
                                                LR chi2(34)     =     190.49
                                                Prob > chi2     =     0.0000
Log likelihood = -1470.7671                     Pseudo R2       =     0.0608

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.000981   .0101292     0.10   0.923     .9813234    1.021032
       exper |   1.023036   .0134918     1.73   0.084     .9969317    1.049825
pyperstudlep |   1.000242   .0035467     0.07   0.946     .9933146    1.007217
pyperstude~s |   1.000687   .0072536     0.09   0.924      .986571    1.015006
pyperstudw~e |   1.096336   .1213151     0.83   0.406     .8825796    1.361863
pyperstudb~k |   1.177899     .16262     1.19   0.236     .8986522    1.543919
pyperstudl~o |   1.095153   .1156105     0.86   0.389     .8904659    1.346891
pyperstudm~e |   .9835536   .0078765    -2.07   0.038     .9682365     .999113
        male |   1.224928   .3268214     0.76   0.447     .7261106     2.06642
         age |   .9802001   .0110308    -1.78   0.076     .9588167     1.00206
       Asian |   9.41e-07    .000916    -0.01   0.989            0           .
       Black |    5958488   9.90e+09     0.01   0.993            0           .
      Latino |   1.049218   .2198983     0.23   0.819     .6957747    1.582207
       Other |   1.948232   2.786977     0.47   0.641     .1180275    32.15866
   AsianMale |  (omitted)
   BlackMale |   1.81e-13   3.90e-10    -0.01   0.989            0           .
  LatinoMale |   1.619562   .4901268     1.59   0.111      .894951    2.930867
   OtherMale |   1.698186   3.223217     0.28   0.780     .0411505     70.0803
-------------+----------------------------------------------------------------
3            |
      tenure |   1.004339    .010247     0.42   0.671      .984455    1.024625
```

```
       exper |   1.109524   .0190675     6.05   0.000     1.072775    1.147532
pyperstudlep |   1.014772   .0037939     3.92   0.000     1.007364    1.022236
pyperstude~s |   1.020381   .0087988     2.34   0.019     1.003281    1.037773
pyperstudw~e |   .9833652   .1232187    -0.13   0.894     .7692308    1.257109
pyperstudb~k |   .8961236   .2116604    -0.46   0.642     .5640504    1.423698
pyperstudl~o |   .9445988   .1124651    -0.48   0.632     .7480011    1.192868
pyperstudm~e |   1.007036   .0067529     1.05   0.296     .9938868    1.020358
        male |   .6493551   .2220571    -1.26   0.207     .3322008    1.269299
         age |   .9542397    .014977    -2.98   0.003     .9253322    .9840503
       Asian |   3.14e-07   .0003051    -0.02   0.988            0           .
       Black |    4.49262   12597.58     0.00   1.000            0           .
      Latino |   1.125385   .2549183     0.52   0.602      .721921    1.754334
       Other |   3.24e-06   .0025643    -0.02   0.987            0           .
   AsianMale |  (omitted)
   BlackMale |   1.53e-07   .0004861    -0.00   0.996            0           .
  LatinoMale |   2.516415   .9442712     2.46   0.014     1.206073    5.250384
   OtherMale |    1024474   8.12e+08     0.02   0.986            0           .
------------------------------------------------------------------------------


--------->  region = 2

Iteration 0:   log likelihood = -820.32948
Iteration 1:   log likelihood = -772.85465
Iteration 2:   log likelihood = -771.01487
Iteration 3:   log likelihood = -770.85904
Iteration 4:   log likelihood = -770.83261
Iteration 5:   log likelihood = -770.82672
Iteration 6:   log likelihood = -770.82527
Iteration 7:   log likelihood = -770.82497
Iteration 8:   log likelihood = -770.82491
Iteration 9:   log likelihood =  -770.8249

Multinomial logistic regression                 Number of obs   =        853
                                                LR chi2(36)     =      99.01
                                                Prob > chi2     =     0.0000
Log likelihood =  -770.8249                     Pseudo R2       =     0.0603

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9919595   .0148799    -0.54   0.590       .96322    1.021556
       exper |   .9767895   .0177548    -1.29   0.196     .9426032    1.012216
pyperstudlep |   1.000357   .0170567     0.02   0.983     .9674787    1.034352
pyperstude~s |   1.008631   .0066396     1.31   0.192     .9957008    1.021728
pyperstudw~e |   .8932376   .0578367    -1.74   0.081     .7867777    1.014103
pyperstudb~k |    .908587   .0590439    -1.48   0.140     .7999296    1.032004
pyperstudl~o |   .8904336    .054505    -1.90   0.058     .7897653    1.003934
pyperstudm~e |   .9827891   .0094993    -1.80   0.072      .964346    1.001585
        male |   1.182127   .3170049     0.62   0.533     .6988783    1.999523
         age |   1.000958   .0153039     0.06   0.950     .9714079    1.031407
       Asian |   5.71e+07   2.35e+11     0.00   0.997            0           .
       Black |   .9830542   .8344692    -0.02   0.984     .1862224    5.189471
      Latino |   .9736417    .259545    -0.10   0.920     .5774218    1.641743
       Other |   1.27e-06   .0018617    -0.01   0.993            0           .
   AsianMale |   1.27e-14   5.90e-11    -0.01   0.995            0           .
   BlackMale |   3.136485   3.507347     1.02   0.307     .3504247    28.07319
  LatinoMale |   1.410695    .552739     0.88   0.380      .654508    3.040544
   OtherMale |    1343879   1.97e+09     0.01   0.992            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9950369   .0119706    -0.41   0.679     .9718494    1.018778
       exper |   1.065573   .0199311     3.40   0.001     1.027217    1.105362
pyperstudlep |   1.003726   .0133851     0.28   0.780     .9778314    1.030306
```

```
pyperstude~s |   1.030196   .0066843     4.58   0.000     1.017178    1.043381
pyperstudw~e |   1.173431   .0886834     2.12   0.034     1.011875     1.36078
pyperstudb~k |   1.121005   .0883974     1.45   0.147     .9604743    1.308367
pyperstudl~o |   1.141481   .0829028     1.82   0.068     .9900291    1.316101
pyperstudm~e |    .991919   .0074985    -1.07   0.283     .9773305    1.006725
        male |   1.152568   .3003827     0.54   0.586     .6915543     1.92091
         age |   .9846156   .0168671    -0.91   0.365     .9521055    1.018236
       Asian |   1.742185   13428.37     0.00   1.000            0           .
       Black |   1.579775   1.092704     0.66   0.509     .4072241    6.128541
      Latino |   .9504612   .2354255    -0.21   0.837     .5849182     1.54445
       Other |   3.306121   4.772157     0.83   0.407     .1952848    55.97178
   AsianMale |   1.17e-06   .0092686    -0.00   0.999            0           .
   BlackMale |   2.791156   2.772671     1.03   0.301     .3983088    19.55908
  LatinoMale |   1.496739   .5433461     1.11   0.267     .7347554    3.048942
   OtherMale |   1.49e-06   .0012303    -0.02   0.987            0           .
------------------------------------------------------------------------------


--------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -331.98121
Iteration 1:   log likelihood = -296.22361
Iteration 2:   log likelihood = -293.82957
Iteration 3:   log likelihood = -293.70684
Iteration 4:   log likelihood = -293.67988
Iteration 5:   log likelihood = -293.67352
Iteration 6:   log likelihood = -293.67221
Iteration 7:   log likelihood = -293.67199
Iteration 8:   log likelihood = -293.67197

Multinomial logistic regression                 Number of obs   =        319
                                                LR chi2(30)     =      76.62
                                                Prob > chi2     =     0.0000
Log likelihood = -293.67197                     Pseudo R2       =     0.1154

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.021886   .0242185     0.91   0.361     .9755043    1.070473
       exper |   .9553591   .0352851    -1.24   0.216     .8886453    1.027081
pyperstudlep |   .9889923   .0511771    -0.21   0.831     .8936059    1.094561
pyperstude~s |   .9817473   .0142238    -1.27   0.204     .9542613    1.010025
pyperstudw~e |   1.040024   .0587611     0.69   0.487     .9310022    1.161812
pyperstudb~k |   1.047095   .0599828     0.80   0.422     .9358904    1.171513
pyperstudl~o |    1.06558    .060948     1.11   0.267     .9525761    1.191989
pyperstudm~e |   .9886988   .0172698    -0.65   0.515     .9554234    1.023133
        male |   .7559743   .3021378    -0.70   0.484     .3453903    1.654642
         age |   .9711985   .0309602    -0.92   0.359     .9123745    1.033815
       Asian |  (omitted)
       Black |   1.174158   .9159293     0.21   0.837     .2545232    5.416591
      Latino |   2.375611   1.396151     1.47   0.141      .750797    7.516717
       Other |    1528115   1.01e+09     0.02   0.983            0           .
   AsianMale |  (omitted)
   BlackMale |   2.149158   3.665789     0.45   0.654     .0759252    60.83464
  LatinoMale |   1.238207   1.213556     0.22   0.827     .1813587    8.453728
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9833639   .0169006    -0.98   0.329      .950791    1.017053
       exper |   1.016555   .0298211     0.56   0.576     .9597556    1.076717
pyperstudlep |   1.078844   .0423078     1.94   0.053      .999029    1.165036
```

```
pyperstude~s |   1.029236    .012136     2.44   0.015     1.005723    1.053299
pyperstudw~e |   1.100844   .0472677     2.24   0.025     1.011992    1.197497
pyperstudb~k |   1.080676   .0463563     1.81   0.070     .9935334    1.175461
pyperstudl~o |    1.07159    .046089     1.61   0.108     .9849601     1.16584
pyperstudm~e |   1.005992   .0123038     0.49   0.625     .9821638    1.030398
        male |   2.661355   .8305438     3.14   0.002     1.443656    4.906163
         age |   1.014616   .0282495     0.52   0.602      .960732    1.071523
       Asian |  (omitted)
       Black |    1.68508    1.34638     0.65   0.514     .3519734    8.067354
      Latino |    .574855   .4987902    -0.64   0.523     .1049513    3.148683
       Other |   641307.7   4.24e+08     0.02   0.984            0           .
   AsianMale |  (omitted)
   BlackMale |   1.39e-06   .0009981    -0.02   0.985            0           .
  LatinoMale |    4.76908   5.143269     1.45   0.147     .5760319    39.48414
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 4

Iteration 0:   log likelihood = -4560.8094
Iteration 1:   log likelihood = -4291.7573
Iteration 2:   log likelihood = -4280.6977
Iteration 3:   log likelihood = -4280.6699
Iteration 4:   log likelihood = -4280.6699

Multinomial logistic regression                 Number of obs   =       4412
                                                LR chi2(36)     =     560.28
                                                Prob > chi2     =     0.0000
Log likelihood = -4280.6699                     Pseudo R2       =     0.0614

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.01171   .0058507     2.01   0.044     1.000308    1.023242
       exper |   1.030474   .0084378     3.67   0.000     1.014068    1.047145
pyperstudlep |   .9996599   .0041022    -0.08   0.934     .9916519    1.007733
pyperstude~s |   .9999993   .0027218    -0.00   1.000     .9946789    1.005348
pyperstudw~e |   .9860255   .0065405    -2.12   0.034     .9732893    .9989283
pyperstudb~k |   .9792735   .0071751    -2.86   0.004     .9653111    .9934378
pyperstudl~o |   .9868483   .0069243    -1.89   0.059     .9733698    1.000513
pyperstudm~e |   1.000681   .0031011     0.22   0.826     .9946211    1.006777
        male |   1.147494   .1065007     1.48   0.138     .9566412    1.376422
         age |    .956743   .0065764    -6.43   0.000     .9439399    .9697197
       Asian |   .4952527   .3300985    -1.05   0.292     .1341157    1.828834
       Black |   1.011383    .116823     0.10   0.922     .8064823    1.268342
      Latino |   1.482259    .246215     2.37   0.018     1.070368    2.052653
       Other |   .5406066   .3601655    -0.92   0.356     .1464839    1.995138
   AsianMale |   .4982208   .6315766    -0.55   0.583     .0415321    5.976673
   BlackMale |   1.834011   .3198658     3.48   0.001     1.303004    2.581417
  LatinoMale |   1.146066    .304442     0.51   0.608     .6809189    1.928961
   OtherMale |   2.076589   2.371463     0.64   0.522     .2214516    19.47252
-------------+----------------------------------------------------------------
3            |
      tenure |    1.02895     .00653     4.50   0.000     1.016231    1.041829
       exper |   1.095911   .0113848     8.82   0.000     1.073823    1.118454
pyperstudlep |   1.019274   .0049713     3.91   0.000     1.009577    1.029064
pyperstude~s |   1.022823   .0036548     6.32   0.000     1.015684    1.030011
pyperstudw~e |   1.010308   .0087501     1.18   0.236     .9933026    1.027604
pyperstudb~k |   .9911001   .0097476    -0.91   0.363     .9721782     1.01039
pyperstudl~o |   .9787975   .0091691    -2.29   0.022     .9609903    .9969346
pyperstudm~e |   1.001544   .0039564     0.39   0.696     .9938191    1.009328
        male |   1.120359   .1212374     1.05   0.294     .9062463    1.385059
         age |   .9633458    .008713    -4.13   0.000      .946419    .9805753
```

```
       Asian |   .2150155   .2353961    -1.40   0.160     .0251528    1.838036
       Black |   .4906748   .0746234    -4.68   0.000     .3642002    .6610698
      Latino |   1.667455   .3102393     2.75   0.006     1.157933    2.401181
       Other |   1.198844   .7477448     0.29   0.771     .3530614    4.070759
   AsianMale |   1.253122   1.950014     0.15   0.885     .0593496    26.45874
   BlackMale |   1.913179   .4358373     2.85   0.004      1.22418    2.989965
  LatinoMale |   1.060235   .3321345     0.19   0.852     .5737872    1.959087
   OtherMale |   1.102407   1.473569     0.07   0.942     .0802705    15.14009
------------------------------------------------------------------------------


---------->  region = 5

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -556.27594
Iteration 1:   log likelihood =  -493.0266
Iteration 2:   log likelihood = -490.52079
Iteration 3:   log likelihood = -490.33586
Iteration 4:   log likelihood =  -490.3023
Iteration 5:   log likelihood = -490.29497
Iteration 6:   log likelihood = -490.29324
Iteration 7:   log likelihood = -490.29285
Iteration 8:   log likelihood = -490.29277
Iteration 9:   log likelihood = -490.29275

Multinomial logistic regression                 Number of obs   =        559
                                                LR chi2(32)     =     131.97
                                                Prob > chi2     =     0.0000
Log likelihood = -490.29275                     Pseudo R2       =     0.1186

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.015005   .0184129     0.82   0.412       .97955    1.051742
       exper |   1.004536   .0270558     0.17   0.867     .9528827    1.058989
pyperstudlep |   .9514335   .0440217    -1.08   0.282     .8689491    1.041748
pyperstude~s |   1.008982   .0089172     1.01   0.312     .9916547    1.026611
pyperstudw~e |   .9615706   .0406757    -0.93   0.354      .885063    1.044692
pyperstudb~k |   .9522405   .0412482    -1.13   0.259     .8747323    1.036617
pyperstudl~o |   .9917606   .0570815    -0.14   0.886     .8859625    1.110193
pyperstudm~e |   1.013714   .0115978     1.19   0.234      .991236    1.036702
        male |   2.831736   .8012679     3.68   0.000     1.626286    4.930702
         age |   .9416364   .0209544    -2.70   0.007     .9014492    .9836151
       Asian |  (omitted)
       Black |   1.627253   .6582145     1.20   0.229     .7364593    3.595516
      Latino |    3.71234    4.80665     1.01   0.311     .2934485    46.96382
       Other |   2.89e-07   .0007619    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   1.332537   .6861903     0.56   0.577     .4856832    3.655997
  LatinoMale |   1.44e-07   .0001907    -0.01   0.991            0           .
   OtherMale |   .8379068   3126.325    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.000309   .0153708     0.02   0.984     .9706321    1.030894
       exper |   1.104063   .0307493     3.55   0.000     1.045411    1.166006
pyperstudlep |   1.072958   .0551981     1.37   0.171     .9700474    1.186787
pyperstude~s |    1.03408   .0090612     3.82   0.000     1.016472    1.051992
pyperstudw~e |   1.085205   .0479475     1.85   0.064     .9951841     1.18337
pyperstudb~k |   1.050771   .0476249     1.09   0.275     .9614542    1.148386
pyperstudl~o |   1.050545   .0547491     0.95   0.344     .9485373    1.163523
pyperstudm~e |   1.019536   .0111658     1.77   0.077     .9978845    1.041657
        male |   3.146429   .8319919     4.33   0.000     1.873871     5.28319
         age |   .9473188   .0233908    -2.19   0.028     .9025654    .9942913
```

```
       Asian |  (omitted)
       Black |   1.260121   .5605067     0.52   0.603     .5269804    3.013214
      Latino |   2.33e-06   .0029464    -0.01   0.992            0           .
       Other |   7.03e-07   .0017468    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   .8566655   .5078494    -0.26   0.794     .2680409    2.737925
  LatinoMale |     318051   4.02e+08     0.01   0.992            0           .
   OtherMale |   .7672296   2695.068    -0.00   1.000            0           .
------------------------------------------------------------------------------


---------> region = 6

Iteration 0:   log likelihood =  -789.8023
Iteration 1:   log likelihood = -742.52844
Iteration 2:   log likelihood = -741.51663
Iteration 3:   log likelihood = -741.37029
Iteration 4:   log likelihood = -741.34796
Iteration 5:   log likelihood = -741.34255
Iteration 6:   log likelihood = -741.34143
Iteration 7:   log likelihood =  -741.3412
Iteration 8:   log likelihood = -741.34114
Iteration 9:   log likelihood = -741.34113

Multinomial logistic regression                 Number of obs   =        750
                                                LR chi2(36)     =      96.92
                                                Prob > chi2     =     0.0000
Log likelihood = -741.34113                     Pseudo R2       =     0.0614

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9685549   .0142399    -2.17   0.030     .9410435    .9968706
       exper |   .9862204   .0182973    -0.75   0.455     .9510027    1.022742
pyperstudlep |   1.015481   .0197252     0.79   0.429     .9775467    1.054887
pyperstude~s |   1.002809   .0077509     0.36   0.717     .9877324    1.018116
pyperstudw~e |   .9599686   .0442087    -0.89   0.375     .8771166    1.050647
pyperstudb~k |    .955604    .045607    -0.95   0.341     .8702692    1.049306
pyperstudl~o |   .9612424   .0457372    -0.83   0.406     .8756521    1.055199
pyperstudm~e |   1.000624   .0082702     0.08   0.940     .9845457    1.016966
        male |   1.097809   .2250133     0.46   0.649     .7346148    1.640567
         age |   .9795067   .0161205    -1.26   0.208     .9484153    1.011617
       Asian |   9.70e-07   .0017564    -0.01   0.994            0           .
       Black |   .9051543   .5174018    -0.17   0.862     .2952304    2.775135
      Latino |   .1699565   .1872848    -1.61   0.108     .0196042    1.473417
       Other |   9.05e-07     .00115    -0.01   0.991            0           .
   AsianMale |    1307727   5.02e+09     0.00   0.997            0           .
   BlackMale |   2.320514   1.871707     1.04   0.297     .4775426    11.27603
  LatinoMale |   6.052516   8.229589     1.32   0.185      .421269    86.95856
   OtherMale |   .8489423   1878.497    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |    .978189    .012373    -1.74   0.081     .9542364    1.002743
       exper |   1.061861   .0206515     3.09   0.002     1.022146    1.103118
pyperstudlep |   1.026881   .0207974     1.31   0.190     .9869176    1.068463
pyperstude~s |   1.031248    .007398     4.29   0.000     1.01685     1.045851
pyperstudw~e |   .9472791   .0412008    -1.25   0.213     .8698732    1.031573
pyperstudb~k |   .9422966   .0419803    -1.33   0.182     .8635067    1.028276
pyperstudl~o |   .9094198   .0405509    -2.13   0.033     .8333156    .9924744
pyperstudm~e |   1.005569   .0076629     0.73   0.466     .9906611      1.0207
        male |   1.600209   .3142748     2.39   0.017      1.08894    2.351524
         age |   .9662461   .0173659    -1.91   0.056      .932802    1.000889
       Asian |   1.35e-06   .0022771    -0.01   0.994            0           .
       Black |    .977875    .537736    -0.04   0.968     .3328169     2.87317
```

```
      Latino |    .691973   .5737454    -0.44   0.657     .1362449    3.514455
       Other |   1.42e-06   .0016906    -0.01   0.991            0           .
   AsianMale |   5.42e+11   1.40e+15     0.01   0.992            0           .
   BlackMale |   .8063999    .662459    -0.26   0.793      .161171    4.034726
  LatinoMale |   2.412492   2.668786     0.80   0.426     .2759537    21.09093
   OtherMale |   .3198658   660.4881    -0.00   1.000            0           .
------------------------------------------------------------------------------


--------->  region = 7

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1035.3165
Iteration 1:   log likelihood = -938.04758
Iteration 2:   log likelihood = -932.63315
Iteration 3:   log likelihood = -932.50966
Iteration 4:   log likelihood = -932.48288
Iteration 5:   log likelihood = -932.47664
Iteration 6:   log likelihood = -932.47534
Iteration 7:   log likelihood = -932.47512
Iteration 8:   log likelihood =  -932.4751

Multinomial logistic regression                 Number of obs   =       1048
                                                LR chi2(34)     =     205.68
                                                Prob > chi2     =     0.0000
Log likelihood =  -932.4751                     Pseudo R2       =     0.0993

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9746926    .013335    -1.87   0.061     .9489038    1.001182
       exper |   1.013536   .0181176     0.75   0.452     .9786408    1.049675
pyperstudlep |     1.0133   .0226552     0.59   0.555     .9698551     1.05869
pyperstude~s |   .9830248   .0079283    -2.12   0.034     .9676078    .9986873
pyperstudw~e |   .8576227   .1055485    -1.25   0.212     .6738109    1.091577
pyperstudb~k |   .8652161   .1074117    -1.17   0.244     .6783484    1.103561
pyperstudl~o |   .8630406   .1079575    -1.18   0.239     .6753901    1.102828
pyperstudm~e |   .9808629   .0133415    -1.42   0.155     .9550594    1.007363
        male |   1.681127   .3620483     2.41   0.016     1.102263    2.563986
         age |   .9745888   .0153084    -1.64   0.101      .945042    1.005059
       Asian |   .8470303   2088.313    -0.00   1.000            0           .
       Black |   3.773319   1.246441     4.02   0.000     1.974903    7.209433
      Latino |   .8246459   .9491358    -0.17   0.867     .0864106    7.869875
       Other |   2.415178   3.018512     0.71   0.480     .2085016     27.9762
   AsianMale |  (omitted)
   BlackMale |   1.374344   .6536677     0.67   0.504     .5410605    3.490963
  LatinoMale |   7.695801   11.10268     1.41   0.157     .4552303    130.0998
   OtherMale |   1.161337   2.208254     0.08   0.937     .0279524       48.25
-------------+----------------------------------------------------------------
3            |
      tenure |   .9754335   .0100145    -2.42   0.015     .9560016    .9952602
       exper |   1.091221   .0174612     5.46   0.000     1.057529    1.125986
pyperstudlep |   1.036571   .0204925     1.82   0.069     .9971742    1.077523
pyperstude~s |   1.039846   .0063307     6.42   0.000     1.027512    1.052328
pyperstudw~e |    .832949   .0947522    -1.61   0.108     .6664843    1.040991
pyperstudb~k |   .8115185   .0929651    -1.82   0.068     .6483169    1.015803
pyperstudl~o |   .7898595   .0915288    -2.04   0.042     .6293797    .9912584
pyperstudm~e |   1.013292   .0082156     1.63   0.103     .9973168    1.029523
        male |   1.713802   .2869647     3.22   0.001     1.234334    2.379516
         age |    .960373   .0139477    -2.78   0.005     .9334214    .9881028
       Asian |    1056722   1.25e+09     0.01   0.991            0           .
       Black |    1.03251   .3497172     0.09   0.925     .5316025    2.005401
      Latino |   .4103019   .4686606    -0.78   0.435     .0437353    3.849236
       Other |   3.59e-06    .001982    -0.02   0.982            0           .
```

```
   AsianMale |  (omitted)
   BlackMale |   2.162922    1.06375     1.57   0.117     .8249169    5.671156
  LatinoMale |    5.05078   7.779503     1.05   0.293     .2467678     103.378
   OtherMale |    1645788   9.08e+08     0.03   0.979            0           .
-------------------------------------------------------------------------------


---------->  region = 8

note: AsianMale omitted because of collinearity
note: LatinoMale omitted because of collinearity
Iteration 0:   log likelihood = -324.79286
Iteration 1:   log likelihood = -290.33052
Iteration 2:   log likelihood =  -288.4901
Iteration 3:   log likelihood = -288.26221
Iteration 4:   log likelihood = -288.22246
Iteration 5:   log likelihood = -288.21355
Iteration 6:   log likelihood = -288.21141
Iteration 7:   log likelihood = -288.21096
Iteration 8:   log likelihood = -288.21086
Iteration 9:   log likelihood = -288.21084

Multinomial logistic regression                 Number of obs   =        331
                                                LR chi2(32)     =      73.16
                                                Prob > chi2     =     0.0000
Log likelihood = -288.21084                     Pseudo R2       =     0.1126

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.000726   .0267104     0.03   0.978     .9497204    1.054471
       exper |   .9989167   .0408713    -0.03   0.979     .9219382    1.082323
pyperstudlep |   .9117177   .0726315    -1.16   0.246     .7799196    1.065788
pyperstude~s |   .9914182   .0162174    -0.53   0.598     .9601368    1.023719
pyperstudw~e |   1.104647    .254605     0.43   0.666     .7031276    1.735454
pyperstudb~k |   1.128932   .2607304     0.53   0.600     .7179265    1.775233
pyperstudl~o |   1.159803   .2844999     0.60   0.546     .7171074     1.87579
pyperstudm~e |   .9762203   .0305078    -0.77   0.441     .9182205    1.037884
        male |   3.695617   1.596782     3.03   0.002     1.584545    8.619248
         age |   .9848878   .0375825    -0.40   0.690     .9139145    1.061373
       Asian |   5.59e+08   7.04e+12     0.00   0.999            0           .
       Black |   8.094041   6.461743     2.62   0.009     1.692867    38.69974
      Latino |   6.43e-06    .004445    -0.02   0.986            0           .
       Other |   1.66e-06   .0021943    -0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |   .2320917   .2731158    -1.24   0.215     .0231207    2.329796
  LatinoMale |  (omitted)
   OtherMale |   6.97e+11   1.05e+15     0.02   0.986            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9747997   .0174146    -1.43   0.153     .9412583    1.009536
       exper |   1.035522   .0293091     1.23   0.217     .9796412     1.09459
pyperstudlep |    1.07782   .0588463     1.37   0.170       .96844    1.199554
pyperstude~s |   1.029798   .0107573     2.81   0.005     1.008929    1.051099
pyperstudw~e |   .9637217   .1665869    -0.21   0.831     .6867754    1.352348
pyperstudb~k |   .9492665   .1634474    -0.30   0.762     .6773698    1.330303
pyperstudl~o |   .8886496   .1602342    -0.65   0.513     .6240921    1.265355
pyperstudm~e |    1.00557    .013675     0.41   0.683     .9791219    1.032733
        male |   3.027489   .8604349     3.90   0.000     1.734462    5.284457
         age |   1.010341   .0268838     0.39   0.699         .959    1.064431
       Asian |   .7503808   14613.62    -0.00   1.000            0           .
       Black |   2.577861   1.811986     1.35   0.178     .6500506    10.22284
      Latino |   .9863455   .9357131    -0.01   0.988     .1536465    6.331922
       Other |   1.95e-06   .0015755    -0.02   0.987            0           .
```

```
   AsianMale |  (omitted)
   BlackMale |   .7290358   .7589204    -0.30   0.761     .0947665    5.608449
  LatinoMale |  (omitted)
   OtherMale |   3.89e+11   4.25e+14     0.02   0.980            0           .
------------------------------------------------------------------------------


---------->  region = 9

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood =  -229.9819
Iteration 1:   log likelihood =  -203.4783
Iteration 2:   log likelihood = -200.87946
Iteration 3:   log likelihood = -200.57549
Iteration 4:   log likelihood = -200.52313
Iteration 5:   log likelihood = -200.51127
Iteration 6:   log likelihood = -200.50845
Iteration 7:   log likelihood = -200.50784
Iteration 8:   log likelihood = -200.50772
Iteration 9:   log likelihood = -200.50769
Iteration 10:  log likelihood = -200.50768

Multinomial logistic regression                 Number of obs   =        224
                                                LR chi2(30)     =      58.95
                                                Prob > chi2     =     0.0012
Log likelihood = -200.50768                     Pseudo R2       =     0.1282

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.078408   .0404286     2.01   0.044     1.002011    1.160631
       exper |   .9209255    .049971    -1.52   0.129     .8280123    1.024265
pyperstudlep |   .9341712    .073786    -0.86   0.389     .8001915    1.090584
pyperstude~s |   .9808496   .0162617    -1.17   0.243     .9494895    1.013245
pyperstudw~e |    .748235   .1387318    -1.56   0.118     .5202535    1.076121
pyperstudb~k |   .7446789   .1537362    -1.43   0.153     .4968686    1.116083
pyperstudl~o |   .7678157   .1401644    -1.45   0.148     .5368717    1.098104
pyperstudm~e |   1.010144   .0259292     0.39   0.694     .9605806    1.062264
        male |   1.002576   .4540766     0.01   0.995     .4126666    2.435762
         age |   .9530854   .0407272    -1.12   0.261     .8765128    1.036347
       Asian |  (omitted)
       Black |   1.05e+07   1.64e+10     0.01   0.992            0           .
      Latino |   2.66e+07   7.44e+10     0.01   0.995            0           .
       Other |   .7717484   .9981067    -0.20   0.841     .0611803    9.735083
   AsianMale |  (omitted)
   BlackMale |   7.63e-15   1.85e-11    -0.01   0.989            0           .
  LatinoMale |   7.38e-08   .0005707    -0.00   0.998            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9938109   .0203453    -0.30   0.762     .9547243    1.034498
       exper |   1.044224    .037253     1.21   0.225      .973704    1.119852
pyperstudlep |   .9979924   .0503782    -0.04   0.968     .9039803    1.101781
pyperstude~s |   1.028297   .0135793     2.11   0.035     1.002023    1.055259
pyperstudw~e |   1.069611   .1517546     0.47   0.635     .8099514    1.412515
pyperstudb~k |   1.072768   .1681925     0.45   0.654     .7889531    1.458681
pyperstudl~o |   1.030553   .1462806     0.21   0.832     .7802746    1.361109
pyperstudm~e |   .9722325    .028289    -0.97   0.333     .9183383    1.029289
        male |   2.082202   .6934814     2.20   0.028     1.083998    3.999606
         age |   .9891413   .0313708    -0.34   0.731     .9295276    1.052578
       Asian |  (omitted)
       Black |    9427637   1.47e+10     0.01   0.992            0           .
```

```
      Latino |   1.58e+07   4.41e+10     0.01   0.995           0           .
       Other |   1.76e-07   .0003188    -0.01   0.993           0           .
   AsianMale |  (omitted)
   BlackMale |   2.87e-08   .0000448    -0.01   0.991           0           .
  LatinoMale |   .9402079   4447.313    -0.00   1.000           0           .
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 10

Iteration 0:   log likelihood = -3030.4898
Iteration 1:   log likelihood = -2872.9791
Iteration 2:   log likelihood = -2870.2981
Iteration 3:   log likelihood = -2870.2619
Iteration 4:   log likelihood = -2870.2618

Multinomial logistic regression                 Number of obs   =       2861
                                                LR chi2(36)     =     320.46
                                                Prob > chi2     =     0.0000
Log likelihood = -2870.2618                     Pseudo R2       =     0.0529

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.016172    .007376     2.21   0.027     1.001818    1.030732
       exper |   .9953053   .0096752    -0.48   0.628     .9765219     1.01445
pyperstudlep |    1.00013   .0060734     0.02   0.983     .9882969    1.012105
pyperstude~s |    .997733   .0036249    -0.62   0.532     .9906536    1.004863
pyperstudw~e |   .9876913   .0104565    -1.17   0.242      .967408      1.0084
pyperstudb~k |   .9861925   .0107449    -1.28   0.202     .9653563    1.007479
pyperstudl~o |   .9887066   .0106581    -1.05   0.292     .9680361    1.009818
pyperstudm~e |   .9963875   .0040335    -0.89   0.371     .9885132    1.004325
        male |   1.515919   .1763875     3.58   0.000     1.206793    1.904229
         age |   .9744642   .0080051    -3.15   0.002        .9589     .990281
       Asian |   2.514527    2.08841     1.11   0.267     .4937428    12.80595
       Black |   2.089611   .3460349     4.45   0.000     1.510457    2.890829
      Latino |   2.436669   .5730184     3.79   0.000     1.536823    3.863394
       Other |    1.52243   .7864397     0.81   0.416     .5531381    4.190264
   AsianMale |   .4799211   .5046773    -0.70   0.485     .0611027    3.769464
   BlackMale |   1.049877   .2603801     0.20   0.844     .6457012    1.707045
  LatinoMale |   1.295405   .4544481     0.74   0.461     .6513148    2.576441
   OtherMale |   .5350906   .4048544    -0.83   0.409     .1214508    2.357514
-------------+----------------------------------------------------------------
3            |
      tenure |   1.020572   .0067825     3.06   0.002     1.007365    1.033953
       exper |   1.056293   .0109972     5.26   0.000     1.034958    1.078069
pyperstudlep |   1.013702   .0066064     2.09   0.037     1.000836    1.026733
pyperstude~s |   1.018028   .0036591     4.97   0.000     1.010882    1.025225
pyperstudw~e |   1.019038   .0112572     1.71   0.088     .9972109    1.041342
pyperstudb~k |   .9976924   .0115196    -0.20   0.841     .9753678    1.020528
pyperstudl~o |   .9858115   .0113054    -1.25   0.213     .9639005     1.00822
pyperstudm~e |   1.001679    .004209     0.40   0.690     .9934639    1.009963
        male |    1.28769    .147697     2.20   0.027     1.028441    1.612292
         age |   .9820205   .0090851    -1.96   0.050     .9643746    .9999893
       Asian |   1.352453   1.149209     0.36   0.722      .255763    7.151658
       Black |    1.34126   .2404969     1.64   0.102     .9438148    1.906071
      Latino |     2.2661     .53724     3.45   0.001     1.423897    3.606445
       Other |    .159297   .1688898    -1.73   0.083      .019941     1.27253
   AsianMale |   .9984216   1.037802    -0.00   0.999     .1301784    7.657534
   BlackMale |   1.444586   .3896635     1.36   0.173      .851412    2.451021
  LatinoMale |   1.094279   .4222324     0.23   0.815     .5136743    2.331137
   OtherMale |   4.201751   5.274984     1.14   0.253     .3587652    49.20965
------------------------------------------------------------------------------
```

```
---------->  region = 11

Iteration 0:   log likelihood = -2175.4825
Iteration 1:   log likelihood = -2021.1053
Iteration 2:   log likelihood = -2018.4596
Iteration 3:   log likelihood = -2018.4024
Iteration 4:   log likelihood = -2018.3925
Iteration 5:   log likelihood = -2018.3903
Iteration 6:   log likelihood = -2018.3897
Iteration 7:   log likelihood = -2018.3896
Iteration 8:   log likelihood = -2018.3896

Multinomial logistic regression                 Number of obs   =       2028
                                                LR chi2(36)     =     314.19
                                                Prob > chi2     =     0.0000
Log likelihood = -2018.3896                     Pseudo R2       =     0.0722

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9678414   .0091242    -3.47   0.001     .9501224    .9858908
       exper |     .95341   .0089921    -5.06   0.000     .9359477    .9711981
pyperstudlep |    1.00673   .0098907     0.68   0.495     .9875304    1.026304
pyperstude~s |   1.000048   .0042381     0.01   0.991     .9917756    1.008389
pyperstudw~e |   .9690651   .0165579    -1.84   0.066     .9371496    1.002068
pyperstudb~k |   .9627179   .0173243    -2.11   0.035     .9293548    .9972788
pyperstudl~o |   .9584966   .0168232    -2.42   0.016     .9260844    .9920431
pyperstudm~e |   .9928344   .0047416    -1.51   0.132     .9835844    1.002171
        male |   1.092648   .1391478     0.70   0.487     .8512963    1.402427
         age |   1.027344   .0082365     3.36   0.001     1.011327    1.043615
       Asian |   2.905801   2.601308     1.19   0.233     .5026435    16.79854
       Black |   1.690716   .4338048     2.05   0.041     1.022513    2.795583
      Latino |   2.587394   .8635936     2.85   0.004     1.345109    4.977002
       Other |   1.057656   .7676311     0.08   0.938     .2550089    4.386659
   AsianMale |   .2052114   .3454937    -0.94   0.347     .0075704    5.562677
   BlackMale |   2.185621   .8677282     1.97   0.049     1.003768    4.759005
  LatinoMale |   .9795781   .5002993    -0.04   0.968     .3600024    2.665463
   OtherMale |   .4172221   .5670959    -0.64   0.520     .0290669    5.988745
-------------+----------------------------------------------------------------
3            |
      tenure |   .9833049   .0080328    -2.06   0.039     .9676862    .9991757
       exper |   .9809384   .0090271    -2.09   0.036     .9634043    .9987916
pyperstudlep |   1.003716   .0099199     0.38   0.707     .9844609    1.023348
pyperstude~s |   1.028635   .0042378     6.85   0.000     1.020362    1.036974
pyperstudw~e |   1.033852   .0188514     1.83   0.068     .9975565    1.071468
pyperstudb~k |   1.005656   .0193716     0.29   0.770     .9683959    1.044349
pyperstudl~o |   1.000178   .0189845     0.01   0.993     .9636522    1.038087
pyperstudm~e |   .9995028   .0044476    -0.11   0.911     .9908236    1.008258
        male |   1.325745   .1650107     2.27   0.023     1.038757    1.692021
         age |   1.065963    .009173     7.42   0.000     1.048135    1.084094
       Asian |   1.097888   1.363583     0.08   0.940     .0962412    12.52435
       Black |   2.001456   .5563172     2.50   0.013     1.160779    3.450983
      Latino |   3.233939   1.122508     3.38   0.001     1.637864    6.385369
       Other |   .4857926    .533604    -0.66   0.511     .0564254    4.182415
   AsianMale |   3.25e-06   .0025089    -0.02   0.987            0           .
   BlackMale |   .8571814   .3988945    -0.33   0.741      .344319    2.133951
  LatinoMale |   .3884876   .2292525    -1.60   0.109     .1221997    1.235049
   OtherMale |   1.068967   1.514077     0.05   0.962     .0665777    17.16326
------------------------------------------------------------------------------


---------->  region = 12
```

```
note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -804.03991
Iteration 1:   log likelihood = -737.13954
Iteration 2:   log likelihood =  -735.0526
Iteration 3:   log likelihood = -734.93129
Iteration 4:   log likelihood = -734.91068
Iteration 5:   log likelihood = -734.90859
Iteration 6:   log likelihood = -734.90814
Iteration 7:   log likelihood = -734.90804
Iteration 8:   log likelihood = -734.90802

Multinomial logistic regression                 Number of obs   =        755
                                                LR chi2(32)     =     138.26
                                                Prob > chi2     =     0.0000
Log likelihood = -734.90802                     Pseudo R2       =     0.0860

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.006486   .0150003     0.43   0.664     .9775117     1.03632
       exper |    .965081   .0193861    -1.77   0.077     .9278233    1.003835
pyperstudlep |   .9904162   .0208185    -0.46   0.647     .9504418    1.032072
pyperstude~s |   1.005441   .0078175     0.70   0.485      .990235     1.02088
pyperstudw~e |   .7771932   .0460016    -4.26   0.000      .692065    .8727928
pyperstudb~k |   .7772947   .0497524    -3.94   0.000     .6856504    .8811881
pyperstudl~o |   .7831095   .0478653    -4.00   0.000     .6946967    .8827743
pyperstudm~e |   .9890293   .0092151    -1.18   0.236      .971132    1.007256
        male |   1.286724   .2835393     1.14   0.253     .8354426    1.981773
         age |   .9730337   .0172232    -1.54   0.122     .9398558    1.007383
       Asian |  (omitted)
       Black |   .9257301    .370853    -0.19   0.847     .4221706    2.029929
      Latino |   2.965248   2.295881     1.40   0.160     .6501408     13.5243
       Other |   1.76e-06   .0015859    -0.01   0.988            0           .
   AsianMale |  (omitted)
   BlackMale |   4.804162   3.116644     2.42   0.016     1.347134    17.13266
  LatinoMale |   .3292934   .3324623    -1.10   0.271     .0455187    2.382187
   OtherMale |   829969.5   7.49e+08     0.02   0.988            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.006517   .0117559     0.56   0.578     .9837376    1.029824
       exper |   1.062592   .0203138     3.18   0.001     1.023514    1.103161
pyperstudlep |   1.049895   .0204175     2.50   0.012      1.01063    1.090685
pyperstude~s |   1.028669   .0070204     4.14   0.000     1.015001    1.042521
pyperstudw~e |   .9071381   .0540463    -1.64   0.102     .8071602      1.0195
pyperstudb~k |   .8840786   .0559872    -1.95   0.052     .7808826    1.000912
pyperstudl~o |   .8600867   .0524566    -2.47   0.013      .763181    .9692971
pyperstudm~e |   .9953421   .0089699    -0.52   0.604     .9779158    1.013079
        male |   1.571992   .3070474     2.32   0.021     1.071989    2.305208
         age |   .9589754   .0166541    -2.41   0.016     .9268833    .9921788
       Asian |  (omitted)
       Black |   1.250083   .4851778     0.58   0.565     .5842161    2.674879
      Latino |   .9893465   .9706139    -0.01   0.991     .1446318    6.767574
       Other |   1.981938    2.61902     0.52   0.605     .1486876    26.41833
   AsianMale |  (omitted)
   BlackMale |   1.398686   .9473007     0.50   0.620     .3708682    5.274984
  LatinoMale |   .6393878   .8233643    -0.35   0.728     .0512436    7.977915
   OtherMale |   7.25e-07   .0007456    -0.01   0.989            0           .
------------------------------------------------------------------------------


---------->  region = 13
```

```
Iteration 0:   log likelihood = -1337.1624
Iteration 1:   log likelihood = -1279.8342
Iteration 2:   log likelihood = -1278.5053
Iteration 3:   log likelihood = -1278.2692
Iteration 4:   log likelihood = -1278.2327
Iteration 5:   log likelihood =  -1278.224
Iteration 6:   log likelihood = -1278.2221
Iteration 7:   log likelihood = -1278.2217
Iteration 8:   log likelihood = -1278.2216
Iteration 9:   log likelihood = -1278.2216

Multinomial logistic regression                 Number of obs   =       1238
                                                LR chi2(36)     =     117.88
                                                Prob > chi2     =     0.0000
Log likelihood = -1278.2216                     Pseudo R2       =     0.0441

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.023455   .0108681     2.18   0.029     1.002374    1.044979
       exper |   .9880103   .0140016    -0.85   0.395     .9609453    1.015838
pyperstudlep |   .9970519   .0130075    -0.23   0.821     .9718807    1.022875
pyperstude~s |   .9923456   .0062496    -1.22   0.222     .9801718    1.004671
pyperstudw~e |   .9657674   .0278623    -1.21   0.227     .9126734     1.02195
pyperstudb~k |   .9913809   .0312852    -0.27   0.784     .9319209    1.054635
pyperstudl~o |   .9774176    .027882    -0.80   0.423     .9242694    1.033622
pyperstudm~e |    .989711    .006621    -1.55   0.122     .9768188    1.002773
        male |   .9833002    .164808    -0.10   0.920     .7079765    1.365694
         age |   .9819979   .0125008    -1.43   0.154     .9577999    1.006807
       Asian |   1.411987   5046.538     0.00   1.000            0           .
       Black |   1.345207   .4733999     0.84   0.399     .6748975     2.68127
      Latino |   1.344248   .3640218     1.09   0.275     .7906318    2.285517
       Other |   4.02e-07   .0004298    -0.01   0.989            0           .
   AsianMale |    6599791   2.81e+10     0.00   0.997            0           .
   BlackMale |   2.164373   1.203495     1.39   0.165     .7278187    6.436368
  LatinoMale |   1.701185    .699151     1.29   0.196     .7601963    3.806952
   OtherMale |    4307758   4.61e+09     0.01   0.989            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9971598   .0096408    -0.29   0.769     .9784421    1.016236
       exper |   1.048405   .0147071     3.37   0.001     1.019972     1.07763
pyperstudlep |   1.009361   .0130205     0.72   0.470     .9841614    1.035206
pyperstude~s |   1.010031   .0061151     1.65   0.099     .9981167    1.022088
pyperstudw~e |   1.046475   .0329117     1.44   0.149     .9839172    1.113011
pyperstudb~k |   1.054127    .036233     1.53   0.125     .9854506    1.127589
pyperstudl~o |   1.032985   .0324573     1.03   0.302     .9712888      1.0986
pyperstudm~e |   .9974007   .0061306    -0.42   0.672     .9854569    1.009489
        male |   1.047169    .163845     0.29   0.768      .770608    1.422983
         age |   .9895184   .0129418    -0.81   0.420     .9644753    1.015212
       Asian |    7985906   1.80e+10     0.01   0.994            0           .
       Black |   .5379277   .2286686    -1.46   0.145     .2338219     1.23755
      Latino |   .9205245   .2661456    -0.29   0.775     .5223152    1.622326
       Other |   2.35e-07   .0002734    -0.01   0.990            0           .
   AsianMale |   2.09e-07   .0008947    -0.00   0.997            0           .
   BlackMale |   1.918002   1.322598     0.94   0.345     .4964613    7.409908
  LatinoMale |   1.240311   .5612872     0.48   0.634     .5108933    3.011142
   OtherMale |   6.036927   8523.883     0.00   0.999            0           .
------------------------------------------------------------------------------


--------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
```

```
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -295.68874
Iteration 1:   log likelihood = -254.91488
Iteration 2:   log likelihood = -250.32871
Iteration 3:   log likelihood =  -249.8637
Iteration 4:   log likelihood = -249.79137
Iteration 5:   log likelihood =   -249.774
Iteration 6:   log likelihood = -249.77037
Iteration 7:   log likelihood = -249.76961
Iteration 8:   log likelihood = -249.76943
Iteration 9:   log likelihood = -249.76939
Iteration 10:  log likelihood = -249.76938

Multinomial logistic regression                 Number of obs   =        312
                                                LR chi2(30)     =      91.84
                                                Prob > chi2     =     0.0000
Log likelihood = -249.76938                     Pseudo R2       =     0.1553

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9864428   .0341467    -0.39   0.693     .9217364    1.055692
       exper |   1.015838   .0521151     0.31   0.759     .9186614    1.123293
pyperstudlep |   .8225653   .1191969    -1.35   0.178     .6191899     1.09274
pyperstude~s |   .9927623   .0212722    -0.34   0.735      .951933    1.035343
pyperstudw~e |   .7057239   .1566025    -1.57   0.116     .4568255    1.090233
pyperstudb~k |   .7427083   .1754309    -1.26   0.208     .4674776    1.179983
pyperstudl~o |   .7090606   .1565059    -1.56   0.119     .4600485    1.092856
pyperstudm~e |    .985552   .0285736    -0.50   0.616     .9311103    1.043177
        male |     3.0486   1.477638     2.30   0.021     1.179039    7.882657
         age |   .9636348   .0426146    -0.84   0.402     .8836291    1.050884
       Asian |  (omitted)
       Black |   5.266246   6.691907     1.31   0.191       .43638    63.55319
      Latino |   2.871969   3.682681     0.82   0.411     .2326469    35.45376
       Other |   1.54e-06   .0038707    -0.01   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |    1047682   1.51e+09     0.01   0.992            0           .
  LatinoMale |   .8365477   1.343169    -0.11   0.911     .0359578    19.46202
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9855578   .0199403    -0.72   0.472     .9472403    1.025425
       exper |   1.082111    .034485     2.48   0.013     1.016589    1.151856
pyperstudlep |   1.066987   .0492606     1.40   0.160     .9746771    1.168039
pyperstude~s |    1.04091   .0132798     3.14   0.002     1.015205    1.067266
pyperstudw~e |   1.207544   .2421355     0.94   0.347     .8151189    1.788896
pyperstudb~k |   1.126535   .2441637     0.55   0.583     .7366415    1.722792
pyperstudl~o |    1.16647   .2314559     0.78   0.438     .7906325    1.720967
pyperstudm~e |   1.012864   .0172597     0.75   0.453      .979594    1.047263
        male |   2.775335   .8106544     3.49   0.000     1.565618    4.919772
         age |   .9467833   .0273809    -1.89   0.059     .8946104    1.001999
       Asian |  (omitted)
       Black |   .9200642   1.104787    -0.07   0.945     .0874418    9.680929
      Latino |   4.21e-07   .0003753    -0.02   0.987            0           .
       Other |   .3323227   .4899104    -0.75   0.455     .0184807    5.975882
   AsianMale |  (omitted)
   BlackMale |    4679455   6.75e+09     0.01   0.992            0           .
  LatinoMale |   856817.9   7.63e+08     0.02   0.988            0           .
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 15
```

```
note: Asian omitted because of collinearity
note: Black omitted because of collinearity
note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -308.17265
Iteration 1:   log likelihood = -277.59764
Iteration 2:   log likelihood = -276.07817
Iteration 3:   log likelihood = -276.06641
Iteration 4:   log likelihood = -276.06641

Multinomial logistic regression                 Number of obs   =        316
                                                LR chi2(24)     =      64.21
                                                Prob > chi2     =     0.0000
Log likelihood = -276.06641                     Pseudo R2       =     0.1042

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.024154   .0302374     0.81   0.419     .9665716    1.085166
       exper |   1.068476   .0543861     1.30   0.193      .967026    1.180569
pyperstudlep |   .9901203   .0244263    -0.40   0.687     .9433845    1.039171
pyperstude~s |   .9801283   .0143017    -1.38   0.169     .9524945    1.008564
pyperstudw~e |   .6791227   .1579476    -1.66   0.096      .430506    1.071315
pyperstudb~k |   .7179708   .1752348    -1.36   0.175     .4449943    1.158402
pyperstudl~o |   .6994355    .160551    -1.56   0.119     .4460255    1.096821
pyperstudm~e |   1.000761   .0259666     0.03   0.977     .9511399    1.052971
        male |   2.059496   .9486202     1.57   0.117     .8350083    5.079619
         age |   .9448705   .0443808    -1.21   0.227     .8617696    1.035985
       Asian |  (omitted)
       Black |  (omitted)
      Latino |   2.105168    1.36119     1.15   0.250      .592795    7.475996
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   .5364082   .4453842    -0.75   0.453     .1053745    2.730582
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9960303   .0193386    -0.20   0.838     .9588395    1.034664
       exper |   1.074832   .0317871     2.44   0.015     1.014302    1.138975
pyperstudlep |   1.016171   .0204413     0.80   0.425     .9768865    1.057036
pyperstude~s |   1.028679   .0098793     2.94   0.003     1.009498    1.048226
pyperstudw~e |   .9666263   .1739118    -0.19   0.850     .6793813     1.37532
pyperstudb~k |   .9195317   .1728744    -0.45   0.655     .6361192    1.329214
pyperstudl~o |   .9379945   .1677199    -0.36   0.720     .6606928    1.331683
pyperstudm~e |   1.007734   .0188365     0.41   0.680      .971483    1.045337
        male |   1.807545    .526125     2.03   0.042     1.021712    3.197788
         age |   .9708264   .0261496    -1.10   0.272     .9209036    1.023456
       Asian |  (omitted)
       Black |  (omitted)
      Latino |   .5308546   .3451629    -0.97   0.330     .1484302     1.89858
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   1.820083   1.439919     0.76   0.449     .3860839    8.580264
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 16

note: AsianMale omitted because of collinearity
```

```
Iteration 0:   log likelihood =  -444.9293
Iteration 1:   log likelihood = -397.56401
Iteration 2:   log likelihood = -392.51143
Iteration 3:   log likelihood = -392.01285
Iteration 4:   log likelihood = -391.91689
Iteration 5:   log likelihood =  -391.8942
Iteration 6:   log likelihood = -391.88915
Iteration 7:   log likelihood = -391.88804
Iteration 8:   log likelihood = -391.88785
Iteration 9:   log likelihood = -391.88783

Multinomial logistic regression                 Number of obs   =        432
                                                LR chi2(34)     =     106.08
                                                Prob > chi2     =     0.0000
Log likelihood = -391.88783                     Pseudo R2       =     0.1192

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.054393   .0293942     1.90   0.057     .9983271    1.113608
       exper |   .9287933    .031828    -2.16   0.031     .8684603    .9933178
pyperstudlep |   .9936927   .0299864    -0.21   0.834     .9366247    1.054238
pyperstude~s |   .9715395    .010654    -2.63   0.008     .9508809    .9926469
pyperstudw~e |   .9295636   .0374829    -1.81   0.070     .8589265     1.00601
pyperstudb~k |   .9526308   .0456584    -1.01   0.311     .8672166    1.046458
pyperstudl~o |   .9503419     .03609    -1.34   0.180     .8821751    1.023776
pyperstudm~e |   1.003744   .0122138     0.31   0.759     .9800883     1.02797
        male |    1.95148   .6505351     2.01   0.045     1.015342    3.750733
         age |   .9897306   .0260866    -0.39   0.695     .9398999    1.042203
       Asian |   4.41e+07   2.88e+11     0.00   0.998            0           .
       Black |   3.503424   3.256215     1.35   0.177     .5667009    21.65866
      Latino |   3.044703   1.914329     1.77   0.077     .8878916    10.44071
       Other |   6.88e-07   .0013756    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   .2580683   .4024221    -0.87   0.385     .0121452    5.483608
  LatinoMale |   .5097036   .5442977    -0.63   0.528     .0628557    4.133245
   OtherMale |    3034968   6.07e+09     0.01   0.994            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.018975   .0170037     1.13   0.260      .986187    1.052852
       exper |    1.00704    .023967     0.29   0.768     .9611443    1.055127
pyperstudlep |   1.070883   .0224908     3.26   0.001     1.027697    1.115884
pyperstude~s |   1.002026   .0074944     0.27   0.787     .9874442    1.016823
pyperstudw~e |   1.046706   .0408455     1.17   0.242     .9696353    1.129903
pyperstudb~k |   1.031439   .0477636     0.67   0.504     .9419467    1.129434
pyperstudl~o |   1.027388   .0387803     0.72   0.474     .9541237    1.106278
pyperstudm~e |   .9987041   .0100759    -0.13   0.898     .9791497    1.018649
        male |   1.426215   .3419855     1.48   0.139     .8914136    2.281869
         age |   1.034085   .0222902     1.55   0.120      .991307    1.078709
       Asian |   1.836161   17925.68     0.00   1.000            0           .
       Black |   6.22e-07   .0005908    -0.02   0.988            0           .
      Latino |   .0518031   .0743441    -2.06   0.039     .0031101    .8628578
       Other |   4.32e-07   .0006614    -0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |   1.242469   1787.937     0.00   1.000            0           .
  LatinoMale |   8.093602   14.95205     1.13   0.258     .2165904    302.4436
   OtherMale |   .5834715   1079.941    -0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 17

Iteration 0:   log likelihood = -467.25763
Iteration 1:   log likelihood = -412.76624
```

```
Iteration 2:   log likelihood = -409.50171
Iteration 3:   log likelihood = -408.93812
Iteration 4:   log likelihood =  -408.8484
Iteration 5:   log likelihood = -408.83905
Iteration 6:   log likelihood = -408.83714
Iteration 7:   log likelihood = -408.83674
Iteration 8:   log likelihood = -408.83665
Iteration 9:   log likelihood = -408.83662

Multinomial logistic regression                 Number of obs   =        469
                                                LR chi2(36)     =     116.84
                                                Prob > chi2     =     0.0000
Log likelihood = -408.83662                     Pseudo R2       =     0.1250

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9916835   .0244067    -0.34   0.734     .9449827    1.040692
       exper |   .9799141   .0325487    -0.61   0.541     .9181521    1.045831
pyperstudlep |   1.066942   .0395701     1.75   0.081     .9921375    1.147386
pyperstude~s |   .9790255   .0139304    -1.49   0.136     .9520995    1.006713
pyperstudw~e |   .7991742   .1344676    -1.33   0.183     .5746718    1.111381
pyperstudb~k |   .8391267   .1398785    -1.05   0.293      .605252    1.163373
pyperstudl~o |   .7976603   .1331018    -1.35   0.175     .5751511    1.106252
pyperstudm~e |   .9817851    .013549    -1.33   0.183     .9555855    1.008703
        male |   2.999037   1.078153     3.06   0.002     1.482433    6.067204
         age |   1.009643   .0286476     0.34   0.735     .9550277    1.067382
       Asian |   6.26e-07   .0025737    -0.00   0.997            0           .
       Black |   8.80e-07   .0008768    -0.01   0.989            0           .
      Latino |   1.02e-06    .000666    -0.02   0.983            0           .
       Other |    2.11929   7455.007     0.00   1.000            0           .
   AsianMale |   1.53e+07   9.86e+10     0.00   0.998            0           .
   BlackMale |   1.03e+12   1.46e+15     0.02   0.984            0           .
  LatinoMale |    2787586   1.83e+09     0.02   0.982            0           .
   OtherMale |    2.67518   9410.456     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9779084   .0154107    -1.42   0.156     .9481658    1.008584
       exper |   1.053838   .0250137     2.21   0.027     1.005935    1.104023
pyperstudlep |   1.061482   .0247048     2.56   0.010     1.014149    1.111024
pyperstude~s |    1.01765   .0107408     1.66   0.097     .9968142     1.03892
pyperstudw~e |   1.172331   .1688858     1.10   0.270     .8839476    1.554799
pyperstudb~k |   1.155186    .166658     1.00   0.317     .8706619     1.53269
pyperstudl~o |   1.150641   .1647348     0.98   0.327     .8691103    1.523367
pyperstudm~e |   .9831185   .0096374    -1.74   0.082     .9644099     1.00219
        male |   2.604849   .6427722     3.88   0.000      1.60598    4.224983
         age |   1.015843   .0217475     0.73   0.463     .9741008    1.059375
       Asian |   6.18e-07   .0014602    -0.01   0.995            0           .
       Black |   3.005947   2.934524     1.13   0.260     .4436134    20.36845
      Latino |   1.277976   .7233352     0.43   0.665     .4214464    3.875282
       Other |    5513678   9.20e+09     0.01   0.993            0           .
   AsianMale |   1.96e+13   6.59e+16     0.01   0.993            0           .
   BlackMale |    1364608   1.37e+09     0.01   0.989            0           .
  LatinoMale |   2.109677   1.688817     0.93   0.351     .4393604    10.13004
   OtherMale |   1.18e-06   .0019635    -0.01   0.993            0           .
------------------------------------------------------------------------------


---------->  region = 18

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -442.5883
Iteration 1:   log likelihood = -391.42695
```

```
Iteration 2:   log likelihood = -389.45785
Iteration 3:   log likelihood = -389.24676
Iteration 4:   log likelihood = -389.21299
Iteration 5:   log likelihood = -389.20535
Iteration 6:   log likelihood = -389.20347
Iteration 7:   log likelihood = -389.20311
Iteration 8:   log likelihood = -389.20305
Iteration 9:   log likelihood = -389.20303

Multinomial logistic regression                 Number of obs   =        432
                                                LR chi2(32)     =     106.77
                                                Prob > chi2     =     0.0000
Log likelihood = -389.20303                     Pseudo R2       =     0.1206

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    .987593    .023191    -0.53   0.595     .9431696    1.034109
       exper |   .9517814   .0325068    -1.45   0.148     .8901549    1.017674
pyperstudlep |   .9735488   .0175191    -1.49   0.136     .9398104    1.008498
pyperstude~s |   1.052091   .0146261     3.65   0.000     1.023811    1.081151
pyperstudw~e |    .748157   .1115034    -1.95   0.052     .5586397    1.001968
pyperstudb~k |   .7524119   .1152373    -1.86   0.063     .5572987    1.015835
pyperstudl~o |   .7311514   .1095342    -2.09   0.037     .5451152    .9806779
pyperstudm~e |   .9928173   .0118324    -0.60   0.545      .969895    1.016281
        male |   1.946242   .6666739     1.94   0.052     .9945407    3.808649
         age |    .983353   .0289958    -0.57   0.569     .9281333    1.041858
       Asian |  (omitted)
       Black |   2.589632   3.818473     0.65   0.519     .1439201    46.59665
      Latino |   1.752383   .9818237     1.00   0.317     .5844111    5.254599
       Other |   3.258534   9356.162     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   1.66e-07   .0001602    -0.02   0.987            0           .
  LatinoMale |   .8740364   .6125436    -0.19   0.848     .2213039    3.451994
   OtherMale |   5.08e-08   .0001719    -0.00   0.996            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9812405   .0156658    -1.19   0.236     .9510115     1.01243
       exper |   1.098533    .033621     3.07   0.002     1.034575    1.166446
pyperstudlep |   .9787935   .0143718    -1.46   0.144     .9510268    1.007371
pyperstude~s |    1.05747   .0118986     4.97   0.000     1.034405     1.08105
pyperstudw~e |   .9311026   .1439111    -0.46   0.644     .6877585    1.260547
pyperstudb~k |   .9336376   .1471296    -0.44   0.663     .6855507    1.271502
pyperstudl~o |   .9133077    .140821    -0.59   0.556     .6751063    1.235555
pyperstudm~e |   .9859984   .0102108    -1.36   0.173     .9661874    1.006216
        male |   1.689703   .4668597     1.90   0.058     .9831644    2.903987
         age |   .9619793    .026638    -1.40   0.162     .9111612    1.015632
       Asian |  (omitted)
       Black |   3.369968   4.032991     1.02   0.310     .3228158    35.18007
      Latino |   1.845633   .8653674     1.31   0.191      .736275     4.62648
       Other |   2.97e+07   4.21e+10     0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   .2897751   .4720712    -0.76   0.447     .0118952      7.0591
  LatinoMale |    .302612   .1917814    -1.89   0.059     .0873845    1.047944
   OtherMale |   7.06e-14   1.40e-10    -0.02   0.988            0           .
------------------------------------------------------------------------------


---------->  region = 19

Iteration 0:   log likelihood =  -782.6971
Iteration 1:   log likelihood = -724.91861
Iteration 2:   log likelihood = -722.95618
Iteration 3:   log likelihood = -722.89148
```

```
Iteration 4:   log likelihood = -722.88028
Iteration 5:   log likelihood = -722.87777
Iteration 6:   log likelihood = -722.87716
Iteration 7:   log likelihood = -722.87703
Iteration 8:   log likelihood = -722.87701

Multinomial logistic regression                 Number of obs   =        732
                                                LR chi2(36)     =     119.64
                                                Prob > chi2     =     0.0000
Log likelihood = -722.87701                     Pseudo R2       =     0.0764

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.01312   .0136808     0.97   0.334     .9866577    1.040292
       exper |   1.056491   .0199631     2.91   0.004      1.01808    1.096351
pyperstudlep |   1.011567   .0063895     1.82   0.069     .9991215    1.024168
pyperstude~s |   1.003453   .0076258     0.45   0.650     .9886174    1.018511
pyperstudw~e |   .9384748   .1102007    -0.54   0.589     .7455384    1.181341
pyperstudb~k |   .9346891   .1179895    -0.54   0.593     .7298214    1.197065
pyperstudl~o |   .9312359   .1058789    -0.63   0.531     .7452131    1.163694
pyperstudm~e |   1.002708   .0075719     0.36   0.720     .9879769    1.017659
        male |   1.242983   .3272662     0.83   0.409     .7419107    2.082471
         age |   .9705472   .0153582    -1.89   0.059     .9409077     1.00112
       Asian |    1079724   9.22e+08     0.02   0.987            0           .
       Black |   2.237943    1.78286     1.01   0.312     .4696111    10.66497
      Latino |   1.358353   .3416863     1.22   0.223     .8296553    2.223964
       Other |   3.09e-06   .0023692    -0.02   0.987            0           .
   AsianMale |   4.22e-07   .0009525    -0.01   0.995            0           .
   BlackMale |   1.257277   1.412573     0.20   0.839     .1390244    11.37027
  LatinoMale |   .8843603    .317367    -0.34   0.732     .4376852    1.786885
   OtherMale |   880577.4   1.96e+09     0.01   0.995            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |    1.03237    .015308     2.15   0.032     1.002799    1.062813
       exper |   1.115367   .0265442     4.59   0.000     1.064536    1.168626
pyperstudlep |   1.020724   .0074343     2.82   0.005     1.006256    1.035399
pyperstude~s |   1.015121   .0096122     1.58   0.113     .9964547    1.034136
pyperstudw~e |   .9608759   .1183893    -0.32   0.746     .7547288     1.22333
pyperstudb~k |    .936779   .1236077    -0.49   0.621     .7233049    1.213257
pyperstudl~o |   .9296748   .1105631    -0.61   0.540     .7363775    1.173712
pyperstudm~e |   1.009734   .0083635     1.17   0.242     .9934741     1.02626
        male |   .8269646   .2659361    -0.59   0.555     .4403081    1.553164
         age |   .9683606   .0195857    -1.59   0.112     .9307243    1.007519
       Asian |   .8629643   1240.429    -0.00   1.000            0           .
       Black |   1.233948   1.191828     0.22   0.828     .1858449    8.193006
      Latino |    1.23549   .3585604     0.73   0.466      .699529    2.182089
       Other |   4.69e-06   .0042538    -0.01   0.989            0           .
   AsianMale |    1258727   2.50e+09     0.01   0.994            0           .
   BlackMale |   3.904427   5.121031     1.04   0.299     .2986239    51.04931
  LatinoMale |    1.34837   .5775524     0.70   0.485     .5823858    3.121817
   OtherMale |   6.50e+12   1.07e+16     0.02   0.986            0           .
------------------------------------------------------------------------------


---------->  region = 20

Iteration 0:   log likelihood = -2070.0149
Iteration 1:   log likelihood = -1956.8899
Iteration 2:   log likelihood = -1950.9192
Iteration 3:   log likelihood =  -1950.504
Iteration 4:   log likelihood = -1950.4396
Iteration 5:   log likelihood = -1950.4242
Iteration 6:   log likelihood = -1950.4208
```

```
Iteration 7:   log likelihood = -1950.4202
Iteration 8:   log likelihood =   -1950.42
Iteration 9:   log likelihood =   -1950.42
Iteration 10:  log likelihood =   -1950.42

Multinomial logistic regression                 Number of obs   =       2115
                                                LR chi2(36)     =     239.19
                                                Prob > chi2     =     0.0000
Log likelihood =   -1950.42                     Pseudo R2       =     0.0578

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9972861   .0085225    -0.32   0.750     .9807214    1.014131
       exper |   1.017316   .0116382     1.50   0.133     .9947598    1.040385
pyperstudlep |   .9790828   .0075108    -2.76   0.006     .9644721    .9939149
pyperstude~s |   1.004104   .0052541     0.78   0.434     .9938586    1.014455
pyperstudw~e |   .9678276   .0433093    -0.73   0.465      .886559    1.056546
pyperstudb~k |   .9666313    .045785    -0.72   0.474     .8809337    1.060666
pyperstudl~o |   .9672319   .0436514    -0.74   0.460     .8853514    1.056685
pyperstudm~e |   .9920198   .0049589    -1.60   0.109     .9823481    1.001787
        male |   1.542916   .2260739     2.96   0.003     1.157766    2.056191
         age |   .9843281   .0096833    -1.61   0.108      .965531    1.003491
       Asian |   2.04e-07   .0003553    -0.01   0.993            0           .
       Black |   1.594196   .4943772     1.50   0.133     .8681102    2.927577
      Latino |   1.558628   .2600873     2.66   0.008     1.123836    2.161633
       Other |   .7565837   .8368368    -0.25   0.801     .0865697    6.612232
   AsianMale |    9857568   1.72e+10     0.01   0.993            0           .
   BlackMale |   .9125124   .4139309    -0.20   0.840     .3750762    2.220026
  LatinoMale |   1.027714   .2496324     0.11   0.910     .6384328    1.654359
   OtherMale |   3.68e-07   .0006081    -0.01   0.993            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.028129   .0090168     3.16   0.002     1.010608    1.045955
       exper |   1.087522    .015814     5.77   0.000     1.056964    1.118963
pyperstudlep |    1.01544    .006871     2.26   0.024     1.002062    1.028997
pyperstude~s |   1.030719   .0059605     5.23   0.000     1.019103    1.042468
pyperstudw~e |   1.152646   .0626128     2.62   0.009     1.036234    1.282136
pyperstudb~k |   1.119771   .0635472     1.99   0.046     1.001898    1.251512
pyperstudl~o |    1.11391   .0607499     1.98   0.048     1.000985    1.239574
pyperstudm~e |   1.007838   .0043229     1.82   0.069     .9994009    1.016347
        male |   1.652238   .2615271     3.17   0.002     1.211543    2.253234
         age |   .9586188   .0123885    -3.27   0.001     .9346428      .98321
       Asian |   2.08e-07   .0003684    -0.01   0.993            0           .
       Black |   1.172461   .3806911     0.49   0.624     .6204662    2.215534
      Latino |   1.020579   .1847253     0.11   0.910     .7157787    1.455173
       Other |   4.90e-07   .0006628    -0.01   0.991            0           .
   AsianMale |   1.565448   5133.104     0.00   1.000            0           .
   BlackMale |   .9352446   .4598901    -0.14   0.892     .3567482     2.45182
  LatinoMale |   1.078473    .282123     0.29   0.773     .6458615    1.800857
   OtherMale |    2961538   4.00e+09     0.01   0.991            0           .
------------------------------------------------------------------------------
by pyschooltype:
. bysort pyschooltype: mlogit admin  tenure exper  pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile male age A
> sian Black Latino Other AsianMale BlackMale LatinoMale OtherMale if validcert1999a==1,
rrr


---------->  pyschooltype =

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -458.75142
```

```
Iteration 1:   log likelihood = -403.09744
Iteration 2:   log likelihood = -399.75966
Iteration 3:   log likelihood = -399.28653
Iteration 4:   log likelihood = -399.21006
Iteration 5:   log likelihood = -399.19245
Iteration 6:   log likelihood = -399.18813
Iteration 7:   log likelihood = -399.18729
Iteration 8:   log likelihood = -399.18715
Iteration 9:   log likelihood = -399.18712
Iteration 10:  log likelihood = -399.18711

Multinomial logistic regression                 Number of obs   =        441
                                                LR chi2(32)     =     119.13
                                                Prob > chi2     =     0.0000
Log likelihood = -399.18711                     Pseudo R2       =     0.1298

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.007995   .0203609     0.39   0.693     .9688679    1.048702
       exper |   1.017965    .024646     0.74   0.462     .9707875    1.067434
pyperstudlep |   1.001795   .0121032     0.15   0.882     .9783519      1.0258
pyperstude~s |   .9967214   .0081838    -0.40   0.689     .9808099    1.012891
pyperstudw~e |    .914562   .0391361    -2.09   0.037     .8409853    .9945758
pyperstudb~k |   .9149733   .0410309    -1.98   0.048     .8379871    .9990323
pyperstudl~o |   .9134234   .0394117    -2.10   0.036      .839354    .9940291
pyperstudm~e |   .9976486   .0099126    -0.24   0.813     .9784083    1.017267
        male |   1.750914   .5311359     1.85   0.065     .9661724    3.173035
         age |   .9668222   .0195684    -1.67   0.096     .9292196    1.005946
       Asian |   1.20e-07   .0006026    -0.00   0.997            0           .
       Black |    1.21596   .6075933     0.39   0.696     .4566561    3.237795
      Latino |   .5342821    .280987    -1.19   0.233     .1905948    1.497719
       Other |   1.14e+07   1.95e+10     0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |   1.08e+07   1.05e+10     0.02   0.987            0           .
  LatinoMale |   1.115748   .8342598     0.15   0.884      .257698    4.830822
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.012668   .0177211     0.72   0.472     .9785244    1.048003
       exper |   1.136532   .0333916     4.36   0.000     1.072934    1.203899
pyperstudlep |   1.019142   .0111843     1.73   0.084     .9974556    1.041301
pyperstude~s |   1.016888   .0091351     1.86   0.062     .9991406    1.034951
pyperstudw~e |   1.029279     .05322     0.56   0.577     .9300806    1.139056
pyperstudb~k |   .9931466   .0541905    -0.13   0.900     .8924173    1.105245
pyperstudl~o |   1.000704   .0526961     0.01   0.989     .9025725    1.109504
pyperstudm~e |   .9977827   .0125119    -0.18   0.859     .9735587    1.022609
        male |   1.576706   .4990032     1.44   0.150     .8479274    2.931858
         age |   .9562291     .02466    -1.74   0.083     .9090976    1.005804
       Asian |   6.32e-08    .000306    -0.00   0.997            0           .
       Black |   1.031915     .56844     0.06   0.955     .3505514     3.03764
      Latino |   .5765967    .316867    -1.00   0.316     .1963798    1.692963
       Other |    9146457   1.57e+10     0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |   1.52e+07   1.47e+10     0.02   0.986            0           .
  LatinoMale |   .9609075    .705041    -0.05   0.957     .2281048     4.04789
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  pyschooltype = B

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -673.84496
```

```
Iteration 1:   log likelihood = -637.60658
Iteration 2:   log likelihood = -633.37957
Iteration 3:   log likelihood = -633.29905
Iteration 4:   log likelihood = -633.28059
Iteration 5:   log likelihood = -633.27659
Iteration 6:   log likelihood = -633.27576
Iteration 7:   log likelihood = -633.27558
Iteration 8:   log likelihood = -633.27553
Iteration 9:   log likelihood = -633.27553

Multinomial logistic regression                 Number of obs   =        699
                                                LR chi2(34)     =      81.14
                                                Prob > chi2     =     0.0000
Log likelihood = -633.27553                     Pseudo R2       =     0.0602

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.01903   .0198147     0.97   0.332     .9809247    1.058616
       exper |   .9684606   .0227859    -1.36   0.173     .9248151    1.014166
pyperstudlep |   1.009737   .0107895     0.91   0.365     .9888095    1.031107
pyperstude~s |   .9901459    .007119    -1.38   0.168     .9762908    1.004198
pyperstudw~e |   .9435889   .0361797    -1.51   0.130     .8752769    1.017232
pyperstudb~k |   .9592357   .0377559    -1.06   0.290     .8880178    1.036165
pyperstudl~o |   .9504053   .0367739    -1.31   0.189      .880995    1.025284
pyperstudm~e |   .9961848   .0042912    -0.89   0.375     .9878097    1.004631
        male |   1.719261   .5398077     1.73   0.084     .9291472     3.18126
         age |   .9713542   .0193946    -1.46   0.145     .9340756    1.010121
       Asian |   2.261536   6700.218     0.00   1.000            0           .
       Black |   3.096384   1.479417     2.37   0.018     1.213837    7.898583
      Latino |   6.668828   3.821797     3.31   0.001     2.168901    20.50498
       Other |   7.45e-06   .0065592    -0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |   .4782581   .3313133    -1.06   0.287     .1230247    1.859226
  LatinoMale |   .2800446   .1967582    -1.81   0.070     .0706605    1.109885
   OtherMale |   149011.3   1.31e+08     0.01   0.989            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |    .998807   .0117503    -0.10   0.919     .9760404    1.022105
       exper |   1.045561   .0183184     2.54   0.011     1.010267    1.082088
pyperstudlep |   1.003845    .009657     0.40   0.690     .9850954    1.022952
pyperstude~s |   1.011197   .0053039     2.12   0.034     1.000854    1.021646
pyperstudw~e |   1.063679    .040896     1.61   0.108     .9864699    1.146931
pyperstudb~k |    1.05631   .0416351     1.39   0.165     .9777792    1.141148
pyperstudl~o |   1.050287   .0407425     1.26   0.206     .9733929    1.133254
pyperstudm~e |   1.002417   .0032514     0.74   0.457     .9960645     1.00881
        male |   1.088082   .2099433     0.44   0.662     .7454593    1.588179
         age |   .9618811   .0155017    -2.41   0.016     .9319731    .9927489
       Asian |    2599785   3.41e+09     0.01   0.991            0           .
       Black |   .5799293   .2827805    -1.12   0.264     .2230073    1.508104
      Latino |    1.28206   .6968558     0.46   0.648     .4418174    3.720264
       Other |   1.100972   1.374499     0.08   0.939     .0953019    12.71895
   AsianMale |  (omitted)
   BlackMale |   2.103928   1.373754     1.14   0.255     .5851147    7.565204
  LatinoMale |    .824893   .5363251    -0.30   0.767     .2306574     2.95004
   OtherMale |   .4174628   .7048255    -0.52   0.605     .0152576    11.42216
------------------------------------------------------------------------------


---------->  pyschooltype = E

Iteration 0:   log likelihood = -9397.1584
Iteration 1:   log likelihood = -8821.3799
Iteration 2:   log likelihood = -8815.2444
```

```
Iteration 3:   log likelihood = -8815.2405
Iteration 4:   log likelihood = -8815.2405

Multinomial logistic regression                 Number of obs   =       8842
                                                LR chi2(36)     =    1163.84
                                                Prob > chi2     =     0.0000
Log likelihood = -8815.2405                     Pseudo R2       =     0.0619

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9952514   .0047113    -1.01   0.315     .9860602    1.004528
       exper |   .9978462   .0058668    -0.37   0.714     .9864135    1.009411
pyperstudlep |   1.011664   .0022209     5.28   0.000      1.00732    1.016026
pyperstude~s |   .9861744    .002226    -6.17   0.000     .9818213    .9905469
pyperstudw~e |   .9802937   .0070861    -2.75   0.006     .9665032     .994281
pyperstudb~k |   .9814006   .0075627    -2.44   0.015     .9666893    .9963358
pyperstudl~o |   .9840268    .007253    -2.18   0.029     .9699134    .9983456
pyperstudm~e |   1.013233   .0040741     3.27   0.001     1.005279    1.021249
        male |   1.790914   .1637323     6.37   0.000     1.497113    2.142372
         age |    .990068   .0047602    -2.08   0.038      .980782    .9994418
       Asian |   1.422356    .662323     0.76   0.449     .5710108    3.543007
       Black |   1.516765   .1666092     3.79   0.000     1.222976    1.881129
      Latino |   1.138033   .1098411     1.34   0.180     .9418859    1.375028
       Other |   .8476186   .3567933    -0.39   0.695     .3714489    1.934203
   AsianMale |   .6036273   .5036299    -0.61   0.545     .1176463    3.097131
   BlackMale |   .8586897   .1852134    -0.71   0.480     .5626496    1.310492
  LatinoMale |   .6878945   .1169625    -2.20   0.028      .492938    .9599563
   OtherMale |   .1945041   .2238977    -1.42   0.155     .0203748    1.856798
-------------+----------------------------------------------------------------
3            |
      tenure |   1.006863    .003795     1.81   0.070     .9994529    1.014329
       exper |   1.058321   .0056926    10.54   0.000     1.047223    1.069538
pyperstudlep |    1.00431   .0019775     2.18   0.029     1.000442    1.008194
pyperstude~s |   1.005379   .0020277     2.66   0.008     1.001413    1.009361
pyperstudw~e |   1.010915   .0074253     1.48   0.139      .996466    1.025574
pyperstudb~k |   .9986235   .0077876    -0.18   0.860     .9834762    1.014004
pyperstudl~o |   .9988614    .007516    -0.15   0.880     .9842383    1.013702
pyperstudm~e |   1.001972   .0036852     0.54   0.592      .994775    1.009221
        male |   2.931429   .2223135    14.18   0.000     2.526539    3.401204
         age |   1.004073   .0046611     0.88   0.381     .9949793    1.013251
       Asian |   .5212498   .3154665    -1.08   0.282     .1591801    1.706881
       Black |   1.036744   .1101717     0.34   0.734     .8418152    1.276809
      Latino |   1.258867   .1104984     2.62   0.009     1.059899    1.495185
       Other |   .4643445   .2083009    -1.71   0.087     .1927519    1.118618
   AsianMale |   .9254521   .8403266    -0.09   0.932     .1561163     5.48605
   BlackMale |   .6165526   .1248209    -2.39   0.017     .4146147    .9168443
  LatinoMale |   .5126161   .0759501    -4.51   0.000     .3834217    .6853426
   OtherMale |   .7541338   .5566445    -0.38   0.702     .1774826    3.204358
------------------------------------------------------------------------------


---------->  pyschooltype = M

Iteration 0:   log likelihood = -5339.7108
Iteration 1:   log likelihood = -5076.8337
Iteration 2:   log likelihood = -5071.2774
Iteration 3:   log likelihood = -5070.9542
Iteration 4:   log likelihood = -5070.8839
Iteration 5:   log likelihood = -5070.8688
Iteration 6:   log likelihood = -5070.8662
Iteration 7:   log likelihood = -5070.8659
Iteration 8:   log likelihood = -5070.8659
Iteration 9:   log likelihood = -5070.8659
```

```
Multinomial logistic regression                 Number of obs   =       5096
                                                LR chi2(36)     =     537.69
                                                Prob > chi2     =     0.0000
Log likelihood = -5070.8659                     Pseudo R2       =     0.0503

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.009603   .0054376     1.77   0.076     .9990019    1.020317
       exper |   .9954023   .0066435    -0.69   0.490      .982466    1.008509
pyperstudlep |   1.013285   .0038587     3.47   0.001      1.00575    1.020876
pyperstude~s |   .9955557   .0028425    -1.56   0.119     .9900002    1.001142
pyperstudw~e |    .976599   .0090367    -2.56   0.010      .959047    .9944723
pyperstudb~k |   .9793154   .0098465    -2.08   0.038     .9602055    .9988056
pyperstudl~o |   .9750126   .0094248    -2.62   0.009     .9567141    .9936611
pyperstudm~e |   .9987118   .0038114    -0.34   0.736     .9912694     1.00621
        male |   1.503531   .1247813     4.91   0.000     1.277819    1.769113
         age |   .9758725   .0054112    -4.40   0.000     .9653241    .9865362
       Asian |   .3138238   .3388901    -1.07   0.283     .0378003     2.60541
       Black |   1.207991   .1653839     1.38   0.168     .9236922    1.579793
      Latino |   1.863592    .251622     4.61   0.000     1.430282    2.428175
       Other |   .5059864   .3283698    -1.05   0.294     .1418191    1.805273
   AsianMale |   2.24e-06   .0017163    -0.02   0.986            0           .
   BlackMale |    1.72686   .3376926     2.79   0.005      1.17707    2.533449
  LatinoMale |   1.019033   .1775923     0.11   0.914     .7241774    1.433942
   OtherMale |   2.542942   2.184666     1.09   0.277     .4721292    13.69657
-------------+----------------------------------------------------------------
3            |
      tenure |   .9996765   .0053086    -0.06   0.951     .9893259    1.010135
       exper |   1.060236   .0083412     7.43   0.000     1.044013    1.076711
pyperstudlep |   1.002939   .0046865     0.63   0.530     .9937957    1.012167
pyperstude~s |   1.005352   .0032824     1.63   0.102     .9989391    1.011806
pyperstudw~e |   1.023991   .0125763     1.93   0.054     .9996361    1.048939
pyperstudb~k |   1.009767   .0134339     0.73   0.465     .9837778    1.036444
pyperstudl~o |   1.010421   .0129382     0.81   0.418     .9853783    1.036101
pyperstudm~e |   1.000574   .0042768     0.13   0.893     .9922265    1.008992
        male |   2.350314   .2118637     9.48   0.000     1.969683      2.8045
         age |   .9757434   .0069684    -3.44   0.001     .9621806    .9894973
       Asian |   8.22e-07   .0006879    -0.02   0.987            0           .
       Black |   .9551083   .1803397    -0.24   0.808     .6596783    1.382844
      Latino |   1.886346   .3114747     3.84   0.000     1.364805    2.607188
       Other |   .3607752   .3776089    -0.97   0.330     .0463787    2.806435
   AsianMale |    2342079   1.96e+09     0.02   0.986            0           .
   BlackMale |   1.657877   .4096342     2.05   0.041     1.021491    2.690731
  LatinoMale |   .8135895   .1650879    -1.02   0.309     .5466199    1.210947
   OtherMale |   3.656306   4.358852     1.09   0.277     .3534155    37.82678
------------------------------------------------------------------------------


---------> pyschooltype = S

Iteration 0:   log likelihood = -6312.0399
Iteration 1:   log likelihood = -6027.5559
Iteration 2:   log likelihood =  -6014.203
Iteration 3:   log likelihood = -6014.1143
Iteration 4:   log likelihood = -6014.1143

Multinomial logistic regression                 Number of obs   =       6635
                                                LR chi2(36)     =     595.85
                                                Prob > chi2     =     0.0000
Log likelihood = -6014.1143                     Pseudo R2       =     0.0472

------------------------------------------------------------------------------
```

```
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9993064   .0041924    -0.17   0.869     .9911231    1.007557
       exper |    .993769   .0055211    -1.13   0.261     .9830066    1.004649
pyperstudlep |    1.01219   .0040325     3.04   0.002     1.004317    1.020124
pyperstude~s |   .9948341   .0024036    -2.14   0.032     .9901343    .9995562
pyperstudw~e |   .9821815   .0072932    -2.42   0.015     .9679905    .9965805
pyperstudb~k |   .9854158   .0078177    -1.85   0.064     .9702119    1.000858
pyperstudl~o |   .9833626   .0075741    -2.18   0.029     .9686292    .9983202
pyperstudm~e |   .9987261   .0024381    -0.52   0.602      .993959    1.003516
        male |   1.252153   .0906368     3.11   0.002     1.086534    1.443017
         age |   .9879724   .0049928    -2.39   0.017      .978235    .9978067
       Asian |   1.891347   1.390303     0.87   0.386     .4477804    7.988725
       Black |   1.708391   .2369562     3.86   0.000     1.301741    2.242075
      Latino |   1.620486   .2162345     3.62   0.000     1.247563    2.104883
       Other |   .8257573   .4719922    -0.33   0.738     .2693498     2.53156
   AsianMale |    .995853   .9116857    -0.00   0.996     .1655523    5.990391
   BlackMale |   1.443698   .2578109     2.06   0.040     1.017353    2.048714
  LatinoMale |   1.414658   .2267336     2.16   0.030     1.033298    1.936767
   OtherMale |   1.305197   .9144694     0.38   0.704     .3305923    5.152992
-------------+----------------------------------------------------------------
3            |
      tenure |   .9787778   .0046393    -4.53   0.000      .969727    .9879131
       exper |   1.054393   .0077885     7.17   0.000     1.039238    1.069769
pyperstudlep |   .9975754   .0056777    -0.43   0.670     .9865091    1.008766
pyperstude~s |   1.014115   .0029116     4.88   0.000     1.008424    1.019837
pyperstudw~e |   1.057497   .0143836     4.11   0.000     1.029678    1.086067
pyperstudb~k |   1.040408   .0148542     2.77   0.006     1.011698    1.069933
pyperstudl~o |   1.040521   .0144711     2.86   0.004     1.012541    1.069274
pyperstudm~e |   1.018086   .0023221     7.86   0.000     1.013545    1.022647
        male |   2.083776   .1945763     7.86   0.000     1.735276    2.502266
         age |   .9881835   .0070927    -1.66   0.098     .9743794    1.002183
       Asian |   1.453945   1.604856     0.34   0.735     .1671078    12.65026
       Black |   1.167752   .2680765     0.68   0.499      .744635    1.831293
      Latino |   1.238277    .252484     1.05   0.295     .8303442    1.846619
       Other |   1.703024   1.102583     0.82   0.411     .4787735     6.05775
   AsianMale |   .6843264    .934644    -0.28   0.781     .0470656        9.95
   BlackMale |   1.010782   .2875538     0.04   0.970      .578765    1.765277
  LatinoMale |   1.134106   .2647435     0.54   0.590     .7177132    1.792076
   OtherMale |   .5659241   .4557779    -0.71   0.480     .1167418    2.743404
------------------------------------------------------------------------------
```

1999-00

```
. mlogit admin  tenure exper  pyperstudlep pyperstudecodis pyperstudwhite pyperstudblack
pyperstudlatino pyperstudmobile male age Asian Black Latino Oth
> er AsianMale BlackMale LatinoMale OtherMale if validcert2000a==1, rrr

Iteration 0:   log likelihood = -23057.491
Iteration 1:   log likelihood = -21669.451
Iteration 2:   log likelihood =     -21596
Iteration 3:   log likelihood = -21595.461
Iteration 4:   log likelihood = -21595.461

Multinomial logistic regression                 Number of obs   =      21876
                                                LR chi2(36)     =    2924.06
                                                Prob > chi2     =     0.0000
Log likelihood = -21595.461                     Pseudo R2       =     0.0634

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
```

```
2             |
      tenure |   1.003834   .0025718     1.49   0.135     .9988057    1.008887
       exper |   .9907986   .0031742    -2.89   0.004     .9845968    .9970395
pyperstudlep |   1.012367   .0013557     9.18   0.000     1.009713    1.015027
pyperstude~s |    .993964    .001022    -5.89   0.000      .991963    .9959691
pyperstudw~e |    1.00011   .0000451     2.43   0.015     1.000021    1.000198
pyperstudb~k |   1.000294   .0000737     3.99   0.000      1.00015    1.000439
pyperstudl~o |   1.000119   .0000413     2.87   0.004     1.000038      1.0002
pyperstudm~e |   1.000096   .0014843     0.06   0.948     .9971914     1.00301
        male |   1.270898    .053829     5.66   0.000     1.169655    1.380904
         age |   .9801086   .0027145    -7.25   0.000     .9748028    .9854434
       Asian |   .9877393   .3155904    -0.04   0.969     .5280521      1.8476
       Black |   1.350515   .0909794     4.46   0.000     1.183469    1.541139
      Latino |    1.30275   .0822214     4.19   0.000     1.151168    1.474292
       Other |     .66472   .1911854    -1.42   0.156     .3782839    1.168045
   AsianMale |   1.099701   .5383855     0.19   0.846     .4212577    2.870788
   BlackMale |   1.409787   .1463307     3.31   0.001     1.150276    1.727846
  LatinoMale |    1.39004   .1235262     3.71   0.000     1.167845     1.65451
   OtherMale |   1.866377   .7331536     1.59   0.112     .8642294    4.030602
-------------+----------------------------------------------------------------
3             |
      tenure |   1.010633   .0023872     4.48   0.000     1.005965    1.015323
       exper |   1.037545   .0034985    10.93   0.000      1.03071    1.044424
pyperstudlep |   1.010852   .0013836     7.89   0.000     1.008144    1.013568
pyperstude~s |   .9999961   .0010425    -0.00   0.997     .9979549    1.002041
pyperstudw~e |   .9990893   .0000672   -13.54   0.000     .9989576    .9992211
pyperstudb~k |   .9986852   .0001105   -11.89   0.000     .9984687    .9989018
pyperstudl~o |   .9986377   .0000656   -20.75   0.000     .9985092    .9987663
pyperstudm~e |   .9938899   .0013154    -4.63   0.000     .9913151    .9964714
        male |   1.580474   .0650831    11.12   0.000     1.457926    1.713324
         age |   .9933403   .0030494    -2.18   0.030     .9873815    .9993351
       Asian |   .4845283   .2247892    -1.56   0.118     .1951721    1.202875
       Black |   .8970605   .0688678    -1.42   0.157     .7717464    1.042723
      Latino |   1.166772   .0765022     2.35   0.019     1.026065    1.326774
       Other |   .4167353   .1475466    -2.47   0.013     .2082042    .8341252
   AsianMale |   1.691863   1.050639     0.85   0.397     .5009251    5.714228
   BlackMale |   1.157958   .1393116     1.22   0.223     .9147162    1.465882
  LatinoMale |   1.058005   .1000871     0.60   0.551     .8789505    1.273536
   OtherMale |   2.199655   .9964048     1.74   0.082     .9052643    5.344829
------------------------------------------------------------------------------

. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=21876)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     20.127    2    0.000
       exper |    166.782    2    0.000
pyperstudlep |    108.726    2    0.000
pyperstude~s |     38.438    2    0.000
pyperstudw~e |    256.657    2    0.000
pyperstudb~k |    224.319    2    0.000
pyperstudl~o |    671.761    2    0.000
pyperstudm~e |     25.221    2    0.000
        male |    129.164    2    0.000
         age |     53.505    2    0.000
       Asian |      2.938    2    0.230
       Black |     27.466    2    0.000
      Latino |     18.578    2    0.000
       Other |      7.961    2    0.019
   AsianMale |      0.732    2    0.694
   BlackMale |     10.982    2    0.004
  LatinoMale |     14.505    2    0.001
   OtherMale |      4.576    2    0.101
```

```
--------------------------------------

**** Wald tests for independent variables (N=21876)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+-------------------------
      tenure |     20.052    2    0.000
       exper |    160.822    2    0.000
pyperstudlep |    106.554    2    0.000
pyperstude~s |     38.399    2    0.000
pyperstudw~e |    215.919    2    0.000
pyperstudb~k |    190.729    2    0.000
pyperstudl~o |    491.412    2    0.000
pyperstudm~e |     24.588    2    0.000
        male |    128.675    2    0.000
         age |     52.630    2    0.000
       Asian |      2.521    2    0.284
       Black |     27.933    2    0.000
      Latino |     18.643    2    0.000
       Other |      7.138    2    0.028
   AsianMale |      0.718    2    0.699
   BlackMale |     10.952    2    0.004
  LatinoMale |     14.494    2    0.001
   OtherMale |      4.454    2    0.108
--------------------------------------

**** Hausman tests of IIA assumption (N=21876)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+----------------------------------
       2 |   -96.390   17     ---    ---
       3 |   -18.651   17     ---    ---
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=21876)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+------------------------------------------------------
       2 |  -4894.266  -4881.732  25.068   19    0.158   for Ho
       3 |  -5052.604  -5044.125  16.958   19    0.593   for Ho
-----------------------------------------------------------------

**** Wald tests for combining alternatives (N=21876)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+-----------------------
       2-       3  | 1885.958   18    0.000
       2-       1  |  574.030   18    0.000
       3-       1  | 1480.595   18    0.000
-----------------------------------------

**** LR tests for combining alternatives (N=21876)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).
```

```
Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 2318.572   18    0.000
       2-       1  |  593.155   18    0.000
       3-       1  | 1841.249   18    0.000
-------------------------------------------
by region
. bysort region: mlogit admin  tenure exper  pyperstudlep pyperstudecodis pyperstudwhite
pyperstudblack pyperstudlatino pyperstudmobile male age Asian B
> lack Latino Other AsianMale BlackMale LatinoMale OtherMale if validcert2000a==1, rrr


---------->  region = 1

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1595.9549
Iteration 1:   log likelihood = -1444.4133
Iteration 2:   log likelihood = -1434.7892
Iteration 3:   log likelihood = -1434.4243
Iteration 4:   log likelihood = -1434.3438
Iteration 5:   log likelihood = -1434.3263
Iteration 6:   log likelihood = -1434.3228
Iteration 7:   log likelihood =  -1434.322
Iteration 8:   log likelihood = -1434.3218
Iteration 9:   log likelihood = -1434.3217
Iteration 10:  log likelihood = -1434.3217

Multinomial logistic regression                 Number of obs   =       1494
                                                LR chi2(34)     =     323.27
                                                Prob > chi2     =     0.0000
Log likelihood = -1434.3217                     Pseudo R2       =     0.1013

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.010008   .0099184     1.01   0.311      .990754    1.029636
       exper |   1.034054   .0140244     2.47   0.014     1.006929     1.06191
pyperstudlep |   1.003124   .0036016     0.87   0.385     .9960896    1.010208
pyperstude~s |   1.005231   .0065435     0.80   0.423      .992488    1.018139
pyperstudw~e |   1.001418   .0013442     1.06   0.291     .9987871    1.004056
pyperstudb~k |   .9911399   .0099259    -0.89   0.374     .9718752    1.010786
pyperstudl~o |   1.000087   .0001091     0.80   0.426     .9998731    1.000301
pyperstudm~e |   .9877618   .0076269    -1.59   0.111     .9729258    1.002824
        male |   1.481651   .4155749     1.40   0.161     .8550672     2.56739
         age |   .9575338   .0113298    -3.67   0.000     .9355832    .9799993
       Asian |    .676388    .799612    -0.33   0.741     .0666688    6.862287
       Black |   4.14e+07   1.65e+11     0.00   0.996            0           .
      Latino |   1.231526   .2717799     0.94   0.345     .7990897    1.897979
       Other |   .9877328    1.22999    -0.01   0.992     .0860334    11.33996
   AsianMale |  (omitted)
   BlackMale |   4.34e-08    .000173    -0.00   0.997            0           .
  LatinoMale |   1.386759   .4349199     1.04   0.297     .7499705    2.564233
   OtherMale |    4475370   5.30e+09     0.01   0.990            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.035472   .0106284     3.40   0.001     1.014849    1.056515
       exper |   1.094473   .0188393     5.24   0.000     1.058165    1.132028
pyperstudlep |   1.011727   .0037828     3.12   0.002     1.004339    1.019168
pyperstude~s |   .9985759    .007879    -0.18   0.857      .983252    1.014139
pyperstudw~e |   .9993466   .0019681    -0.33   0.740     .9954967    1.003211
pyperstudb~k |   .9898933   .0141083    -0.71   0.476     .9626241    1.017935
pyperstudl~o |   .9988035   .0001637    -7.31   0.000     .9984827    .9991244
pyperstudm~e |   .9989393    .005682    -0.19   0.852     .9878646    1.010138
        male |   .5811001   .2195661    -1.44   0.151     .2770946    1.218635
```

```
         age |   .9503866   .0149373    -3.24   0.001     .9215564    .9801187
       Asian |   3.04e-07   .0003788    -0.01   0.990            0           .
       Black |   3.566104   23645.68     0.00   1.000            0           .
      Latino |   1.164131   .2670431     0.66   0.508     .7425784    1.824993
       Other |   8.61e-07   .0012856    -0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |   1.24e-07   .0008557    -0.00   0.998            0           .
  LatinoMale |   3.299506   1.350342     2.92   0.004     1.479414    7.358821
   OtherMale |   1.55e+13   2.96e+16     0.02   0.987            0           .
------------------------------------------------------------------------------


---------->  region = 2

Iteration 0:   log likelihood = -827.15811
Iteration 1:   log likelihood = -773.30022
Iteration 2:   log likelihood = -770.13063
Iteration 3:   log likelihood = -769.94982
Iteration 4:   log likelihood = -769.91244
Iteration 5:   log likelihood =  -769.9041
Iteration 6:   log likelihood = -769.90273
Iteration 7:   log likelihood = -769.90258
Iteration 8:   log likelihood = -769.90255
Iteration 9:   log likelihood = -769.90255

Multinomial logistic regression                 Number of obs   =        860
                                                LR chi2(36)     =     114.51
                                                Prob > chi2     =     0.0000
Log likelihood = -769.90255                     Pseudo R2       =     0.0692

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.011835   .0157494     0.76   0.450     .9814327    1.043179
       exper |     .95339   .0179529    -2.53   0.011     .9188443    .9892345
pyperstudlep |   1.002526   .0146815     0.17   0.863     .9741595    1.031718
pyperstude~s |   1.006977   .0071968     0.97   0.331     .9929695    1.021181
pyperstudw~e |     1.0001   .0005185     0.19   0.846     .9990847    1.001117
pyperstudb~k |   1.001135   .0028213     0.40   0.687     .9956207     1.00668
pyperstudl~o |   .9999984   .0003027    -0.01   0.996     .9994053    1.000592
pyperstudm~e |    .984547   .0082706    -1.85   0.064     .9684696    1.000891
        male |   1.462754    .403504     1.38   0.168      .851855    2.511755
         age |   1.005219   .0154925     0.34   0.736     .9753083    1.036047
       Asian |   2.34e+08   1.84e+12     0.00   0.998            0           .
       Black |   2.645504   2.086556     1.23   0.217     .5638333     12.4127
      Latino |   .9679961   .2588201    -0.12   0.903     .5731677    1.634803
       Other |   3.91e-07   .0008527    -0.01   0.995            0           .
   AsianMale |   1.11e-15   9.31e-12    -0.00   0.997            0           .
   BlackMale |   .6343548   .6573783    -0.44   0.661     .0832218    4.835347
  LatinoMale |   1.247354   .4881116     0.56   0.572     .5792948    2.685839
   OtherMale |    3100628   6.76e+09     0.01   0.995            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.009451   .0123297     0.77   0.441     .9855718    1.033908
       exper |    1.03861      .0186     2.12   0.034     1.002788    1.075713
pyperstudlep |    .982922   .0129779    -1.30   0.192     .9578121     1.00869
pyperstude~s |   1.022064    .006614     3.37   0.001     1.009183     1.03511
pyperstudw~e |   1.000135   .0005865     0.23   0.818      .998986    1.001285
pyperstudb~k |   .9998016   .0033793    -0.06   0.953     .9932003    1.006447
pyperstudl~o |   .9983896   .0003865    -4.16   0.000     .9976323    .9991475
pyperstudm~e |    .988124    .007001    -1.69   0.092     .9744971    1.001942
        male |   1.299328   .3371534     1.01   0.313     .7813518    2.160683
         age |   .9782435   .0161395    -1.33   0.182     .9471167    1.010393
       Asian |    2.65431   38655.69     0.00   1.000            0           .
```

```
       Black |   2.248567   1.561162     1.17   0.243     .5766648    8.767752
      Latino |   .7815748   .1860175    -1.04   0.300     .4902094    1.246119
       Other |   3.63e-07   .0006369    -0.01   0.993            0           .
   AsianMale |   1.48e-06   .0219159    -0.00   0.999            0           .
   BlackMale |   .7836047   .7717581    -0.25   0.804     .1137009    5.400451
  LatinoMale |   1.679044   .6066179     1.43   0.151     .8270533    3.408715
   OtherMale |   3.528959   7216.514     0.00   1.000            0           .
-------------------------------------------------------------------------------


---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -351.71127
Iteration 1:   log likelihood = -316.20024
Iteration 2:   log likelihood = -314.75544
Iteration 3:   log likelihood = -314.30545
Iteration 4:   log likelihood = -314.27684
Iteration 5:   log likelihood = -314.27542
Iteration 6:   log likelihood = -314.27534
Iteration 7:   log likelihood = -314.27534

Multinomial logistic regression                 Number of obs   =        335
                                                LR chi2(30)     =      74.87
                                                Prob > chi2     =     0.0000
Log likelihood = -314.27534                     Pseudo R2       =     0.1064

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.026476   .0232921     1.15   0.249     .9818242    1.073158
       exper |   .9751117   .0334527    -0.73   0.463     .9117014    1.042932
pyperstudlep |   .9373402   .0479844    -1.26   0.206     .8478567    1.036268
pyperstude~s |    1.00268   .0124026     0.22   0.829     .9786638    1.027286
pyperstudw~e |   .9999592   .0008503    -0.05   0.962     .9982942    1.001627
pyperstudb~k |   .9999618    .002873    -0.01   0.989     .9943466    1.005609
pyperstudl~o |   1.000464   .0009408     0.49   0.622     .9986218     1.00231
pyperstudm~e |   .9971813   .0143343    -0.20   0.844     .9694786    1.025676
        male |   .8630155   .3218811    -0.39   0.693     .4154739    1.792641
         age |   .9531214    .029639    -1.54   0.123     .8967649     1.01302
       Asian |  (omitted)
       Black |   2.055834   1.562967     0.95   0.343     .4632912     9.12267
      Latino |   2.280443   1.458158     1.29   0.197     .6512461     7.98534
       Other |   1.71e+09   3.19e+13     0.00   0.999            0           .
   AsianMale |  (omitted)
   BlackMale |   2.228554   3.380636     0.53   0.597     .1139675     43.5778
  LatinoMale |   .9680384    .985637    -0.03   0.975     .1315881    7.121453
   OtherMale |  (omitted)
-------------+-----------------------------------------------------------------
3            |
      tenure |   1.010832   .0174967     0.62   0.534     .9771144    1.045713
       exper |    .996675   .0271506    -0.12   0.903     .9448564    1.051336
pyperstudlep |    1.02302   .0338933     0.69   0.492     .9587008    1.091653
pyperstude~s |   1.023102    .010797     2.16   0.030     1.002157    1.044484
pyperstudw~e |   1.000992     .00084     1.18   0.238     .9993465    1.002639
pyperstudb~k |   .9947632     .00278    -1.88   0.060     .9893294    1.000227
pyperstudl~o |   .9976044   .0009628    -2.49   0.013      .995719    .9994933
pyperstudm~e |   .9980183   .0103254    -0.19   0.848     .9779847    1.018462
        male |   2.779895    .849993     3.34   0.001     1.526726     5.06169
         age |   .9940591   .0260505    -0.23   0.820     .9442901    1.046451
       Asian |  (omitted)
       Black |   2.419144   1.858318     1.15   0.250     .5367752    10.90262
```

```
      Latino |   2.065686   1.286102     1.17   0.244     .6096824    6.998822
       Other |   8.19e+08   1.53e+13     0.00   0.999            0           .
   AsianMale |  (omitted)
   BlackMale |   1.30e-09   .0000361    -0.00   0.999            0           .
  LatinoMale |   1.092327   .9864028     0.10   0.922     .1860772    6.412275
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 4

Iteration 0:   log likelihood = -4582.5444
Iteration 1:   log likelihood = -4275.1992
Iteration 2:   log likelihood = -4254.9667
Iteration 3:   log likelihood = -4254.8053
Iteration 4:   log likelihood = -4254.8053

Multinomial logistic regression                 Number of obs   =       4415
                                                LR chi2(36)     =     655.48
                                                Prob > chi2     =     0.0000
Log likelihood = -4254.8053                     Pseudo R2       =     0.0715

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.013454   .0056007     2.42   0.016     1.002536    1.024491
       exper |   1.025585   .0077006     3.36   0.001     1.010602    1.040789
pyperstudlep |   1.009418   .0033244     2.85   0.004     1.002923    1.015954
pyperstude~s |   .9910917   .0021644    -4.10   0.000     .9868588    .9953429
pyperstudw~e |   .9997995    .000079    -2.54   0.011     .9996447    .9999543
pyperstudb~k |   1.000126    .000121     1.04   0.297      .999889    1.000364
pyperstudl~o |    1.00016   .0000927     1.73   0.084     .9999787    1.000342
pyperstudm~e |    1.00275   .0035282     0.78   0.435     .9958587    1.009689
        male |   1.133381   .1070061     1.33   0.185      .941914    1.363768
         age |   .9548119   .0061599    -7.17   0.000     .9428147    .9669617
       Asian |   .6536492   .3936997    -0.71   0.480     .2007508    2.128297
       Black |   .8057879   .0906008    -1.92   0.055     .6464185    1.004449
      Latino |   1.403377   .2274116     2.09   0.037     1.021505    1.928005
       Other |   .4996244   .3332651    -1.04   0.298     .1351654    1.846808
   AsianMale |   .2770696   .3383552    -1.05   0.293     .0252993    3.034376
   BlackMale |    1.76188   .3076739     3.24   0.001     1.251217    2.480962
  LatinoMale |    1.24393   .3362731     0.81   0.419      .732301    2.113014
   OtherMale |   2.710805    2.79881     0.97   0.334     .3583133    20.50849
-------------+----------------------------------------------------------------
3            |
      tenure |   1.038312   .0064916     6.01   0.000     1.025666    1.051113
       exper |   1.074431   .0102555     7.52   0.000     1.054518    1.094721
pyperstudlep |   1.011806   .0039398     3.01   0.003     1.004114    1.019558
pyperstude~s |   .9993952   .0026338    -0.23   0.818     .9942464    1.004571
pyperstudw~e |   .9991508   .0001316    -6.45   0.000     .9988929    .9994089
pyperstudb~k |   .9991327   .0001952    -4.44   0.000     .9987501    .9995154
pyperstudl~o |   .9989392   .0001664    -6.37   0.000     .9986131    .9992654
pyperstudm~e |   .9944631   .0039925    -1.38   0.167     .9866686    1.002319
        male |   1.353675   .1516877     2.70   0.007     1.086756    1.686153
         age |    .964644   .0081994    -4.23   0.000     .9487066    .9808492
       Asian |   .2440195    .266215    -1.29   0.196     .0287607    2.070379
       Black |   .4491626   .0656949    -5.47   0.000     .3372145    .5982752
      Latino |   1.481788   .2709539     2.15   0.032     1.035472    2.120476
       Other |   .7370221   .5047988    -0.45   0.656      .192521    2.821518
   AsianMale |    .930939    1.43135    -0.05   0.963     .0457267    18.95275
   BlackMale |   1.364807   .3139909     1.35   0.176     .8694442    2.142401
  LatinoMale |   1.335967   .4222769     0.92   0.359     .7190272    2.482255
   OtherMale |   1.451657    1.95498     0.28   0.782      .103641    20.33277
------------------------------------------------------------------------------
```

```
---------->  region = 5

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -572.07006
Iteration 1:   log likelihood = -505.64533
Iteration 2:   log likelihood = -502.53353
Iteration 3:   log likelihood = -502.45158
Iteration 4:   log likelihood =   -502.436
Iteration 5:   log likelihood = -502.43229
Iteration 6:   log likelihood = -502.43146
Iteration 7:   log likelihood = -502.43128
Iteration 8:   log likelihood = -502.43125

Multinomial logistic regression                 Number of obs   =        572
                                                LR chi2(32)     =     139.28
                                                Prob > chi2     =     0.0000
Log likelihood = -502.43125                     Pseudo R2       =     0.1217

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.001576   .0174699     0.09   0.928     .9679141    1.036408
       exper |   1.009692   .0253421     0.38   0.701     .9612242    1.060604
pyperstudlep |   .9253927   .0412687    -1.74   0.082     .8479417    1.009918
pyperstude~s |   1.024425   .0081723     3.02   0.002     1.008532    1.040568
pyperstudw~e |    1.00108   .0004231     2.55   0.011     1.000251    1.001909
pyperstudb~k |    .999047   .0004361    -2.18   0.029     .9981927    .9999021
pyperstudl~o |   1.005149   .0030027     1.72   0.086     .9992806    1.011051
pyperstudm~e |   1.019941   .0159426     1.26   0.207     .9891674    1.051671
        male |   3.053749   .8632069     3.95   0.000     1.754782    5.314268
         age |   .9505744   .0200256    -2.41   0.016     .9121242    .9906455
       Asian |  (omitted)
       Black |   1.528009   .5906161     1.10   0.273     .7163312    3.259402
      Latino |   9.211873   13.98341     1.46   0.144     .4701582    180.4895
       Other |   2.85e-06   .0030044    -0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   1.447616   .7546251     0.71   0.478      .521113    4.021376
  LatinoMale |   .0925451   .1846498    -1.19   0.233     .0018535    4.620684
   OtherMale |   .6201418   925.5313    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9939155   .0143202    -0.42   0.672     .9662411    1.022383
       exper |   1.086698   .0268142     3.37   0.001     1.035393    1.140544
pyperstudlep |   .9774465   .0396279    -0.56   0.574     .9027831    1.058285
pyperstude~s |   1.012198   .0075172     1.63   0.103     .9975712    1.027039
pyperstudw~e |   .9992186   .0004831    -1.62   0.106     .9982721    1.000166
pyperstudb~k |   .9976918   .0006203    -3.72   0.000     .9964768    .9989083
pyperstudl~o |   1.001748   .0031975     0.55   0.584     .9955007    1.008035
pyperstudm~e |   1.016748   .0149579     1.13   0.259     .9878494    1.046491
        male |    3.02934   .7785837     4.31   0.000     1.830531    5.013246
         age |    .969533   .0216731    -1.38   0.166     .9279717    1.012956
       Asian |  (omitted)
       Black |   1.215938   .4883417     0.49   0.626     .5534191    2.671583
      Latino |   4.116141   6.179791     0.94   0.346     .2170371    78.06322
       Other |   .0000114   .0112624    -0.01   0.991            0           .
   AsianMale |  (omitted)
   BlackMale |   .9589342   .5512492    -0.07   0.942     .3107924    2.958743
  LatinoMale |    .096454   .1899497    -1.19   0.235     .0020325    4.577378
   OtherMale |   .2566301   359.9483    -0.00   0.999            0           .
------------------------------------------------------------------------------
```

```
---------->  region = 6

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -779.48985
Iteration 1:   log likelihood = -700.65474
Iteration 2:   log likelihood =  -697.6075
Iteration 3:   log likelihood = -697.48061
Iteration 4:   log likelihood = -697.45324
Iteration 5:   log likelihood = -697.44687
Iteration 6:   log likelihood = -697.44555
Iteration 7:   log likelihood = -697.44533
Iteration 8:   log likelihood =  -697.4453

Multinomial logistic regression                 Number of obs   =        730
                                                LR chi2(34)     =     164.09
                                                Prob > chi2     =     0.0000
Log likelihood =  -697.4453                     Pseudo R2       =     0.1053

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9627973   .0142467    -2.56   0.010     .9352753    .9911292
       exper |   .9860759   .0187867    -0.74   0.462     .9499337    1.023593
pyperstudlep |   1.072216   .0204883     3.65   0.000     1.032802    1.113134
pyperstude~s |   1.008806   .0077749     1.14   0.255     .9936824    1.024161
pyperstudw~e |   1.000635   .0002665     2.38   0.017     1.000113    1.001157
pyperstudb~k |   1.001018   .0009149     1.11   0.265     .9992269    1.002813
pyperstudl~o |   .9992717   .0006715    -1.08   0.278     .9979565    1.000589
pyperstudm~e |   1.001536   .0093537     0.16   0.869     .9833697    1.020038
        male |   1.372676   .2889976     1.50   0.132     .9085721    2.073846
         age |    .978737   .0162872    -1.29   0.197     .9473296    1.011186
       Asian |   1.07e-06   .0015693    -0.01   0.993            0           .
       Black |   1.045182   .5573566     0.08   0.934     .3675171    2.972391
      Latino |   .1854036   .2109666    -1.48   0.139     .0199322    1.724572
       Other |   .6316004   1.188546    -0.24   0.807     .0157997    25.24844
   AsianMale |  (omitted)
   BlackMale |   3.207643   2.558381     1.46   0.144     .6718572    15.31422
  LatinoMale |   40.08428   65.61339     2.25   0.024     1.620519    991.5027
   OtherMale |   1.08e-06   .0010597    -0.01   0.989            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9643946   .0124915    -2.80   0.005     .9402199    .9891908
       exper |   1.089311   .0231878     4.02   0.000     1.044799     1.13572
pyperstudlep |   1.060443   .0201439     3.09   0.002     1.021687    1.100668
pyperstude~s |   1.010338   .0072028     1.44   0.149     .9963185    1.024554
pyperstudw~e |   .9990258    .000359    -2.71   0.007     .9983226    .9997296
pyperstudb~k |   .9998707   .0010743    -0.12   0.904     .9977674    1.001978
pyperstudl~o |   .9984039   .0010494    -1.52   0.129     .9963493    1.000463
pyperstudm~e |   .9965542   .0074569    -0.46   0.645     .9820455    1.011277
        male |   1.899949   .3894306     3.13   0.002      1.27137    2.839303
         age |   .9447924    .018397    -2.92   0.004     .9094142    .9815468
       Asian |   5.53e-06   .0077505    -0.01   0.993            0           .
       Black |   1.242742   .6396189     0.42   0.673     .4531911     3.40785
      Latino |   .6935712   .6282007    -0.40   0.686     .1175214    4.093221
       Other |   5.39e-07   .0003574    -0.02   0.983            0           .
   AsianMale |  (omitted)
   BlackMale |   .9554188   .7899968    -0.06   0.956       .18896    4.830784
  LatinoMale |   5.006975   7.845453     1.03   0.304     .2321794     107.976
   OtherMale |     337433   2.24e+08     0.02   0.985            0           .
------------------------------------------------------------------------------


---------->  region = 7
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -973.68208
Iteration 1:   log likelihood = -892.46174
Iteration 2:   log likelihood = -885.65312
Iteration 3:   log likelihood = -885.30275
Iteration 4:   log likelihood = -885.22886
Iteration 5:   log likelihood = -885.21072
Iteration 6:   log likelihood = -885.20716
Iteration 7:   log likelihood = -885.20653
Iteration 8:   log likelihood = -885.20646
Iteration 9:   log likelihood = -885.20645

Multinomial logistic regression                 Number of obs   =        986
                                                LR chi2(34)     =     176.95
                                                Prob > chi2     =     0.0000
Log likelihood = -885.20645                     Pseudo R2       =     0.0909

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9862048   .0134102    -1.02   0.307     .9602684    1.012842
       exper |   1.018268   .0181471     1.02   0.310     .9833147    1.054465
pyperstudlep |   1.004063   .0203255     0.20   0.841     .9650055    1.044701
pyperstude~s |   1.008812   .0079083     1.12   0.263     .9934306    1.024432
pyperstudw~e |   1.001176   .0003876     3.04   0.002     1.000417    1.001936
pyperstudb~k |   1.000041   .0005227     0.08   0.938     .9990166    1.001066
pyperstudl~o |   .9993502   .0012236    -0.53   0.595     .9969549    1.001751
pyperstudm~e |   .9835354   .0163127    -1.00   0.317     .9520772    1.016033
        male |    1.97902   .4388477     3.08   0.002     1.281434    3.056357
         age |   .9577757   .0158252    -2.61   0.009     .9272557    .9893003
       Asian |   4.43e-07   .0007666    -0.01   0.993            0           .
       Black |   2.951092   1.012604     3.15   0.002     1.506299    5.781682
      Latino |   1.289775   1.469008     0.22   0.823      .138365     12.0227
       Other |   1.29e-06    .001867    -0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |   1.128489   .5658312     0.24   0.809     .4223764    3.015053
  LatinoMale |   5.314773   9.067022     0.98   0.327     .1876428     150.535
   OtherMale |   .5262037   1012.404    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9847027   .0098821    -1.54   0.125     .9655233    1.004263
       exper |   1.053927   .0149517     3.70   0.000     1.025026    1.083643
pyperstudlep |   1.010457   .0155351     0.68   0.499      .980463    1.041369
pyperstude~s |   1.009031   .0057017     1.59   0.112     .9979177    1.020269
pyperstudw~e |   .9988354   .0004551    -2.56   0.011     .9979439    .9997278
pyperstudb~k |   .9983726   .0007307    -2.23   0.026     .9969415    .9998059
pyperstudl~o |   .9977014   .0014699    -1.56   0.118     .9948246    1.000586
pyperstudm~e |   1.003173   .0072574     0.44   0.661     .9890488    1.017498
        male |   1.640034   .2781659     2.92   0.004     1.176198    2.286783
         age |   .9852064   .0129325    -1.14   0.256     .9601825    1.010882
       Asian |   7.288662   12.95455     1.12   0.264     .2237479    237.4306
       Black |   1.219906   .4054233     0.60   0.550     .6359722    2.339992
      Latino |   6.03e-07   .0004916    -0.02   0.986            0           .
       Other |   1.537171   1.931145     0.34   0.732     .1310267     18.0337
   AsianMale |  (omitted)
   BlackMale |   1.533271   .7651205     0.86   0.392     .5765792    4.077356
  LatinoMale |   1.11e+07   9.07e+09     0.02   0.984            0           .
   OtherMale |   .9764542   1.610766    -0.01   0.988     .0385038    24.76285
------------------------------------------------------------------------------


--------->  region = 8
```

```
note: AsianMale omitted because of collinearity
note: LatinoMale omitted because of collinearity
Iteration 0:   log likelihood = -322.33137
Iteration 1:   log likelihood = -285.96853
Iteration 2:   log likelihood =  -283.3348
Iteration 3:   log likelihood =  -283.0759
Iteration 4:   log likelihood = -283.03694
Iteration 5:   log likelihood = -283.02735
Iteration 6:   log likelihood = -283.02542
Iteration 7:   log likelihood = -283.02501
Iteration 8:   log likelihood = -283.02491
Iteration 9:   log likelihood = -283.02489

Multinomial logistic regression                 Number of obs   =        327
                                                LR chi2(32)     =      78.61
                                                Prob > chi2     =     0.0000
Log likelihood = -283.02489                     Pseudo R2       =     0.1219

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9899442   .0248136    -0.40   0.687     .9424857    1.039792
       exper |   1.060709   .0433549     1.44   0.149     .9790494    1.149179
pyperstudlep |   .9729984   .0469472    -0.57   0.571     .8852004    1.069505
pyperstude~s |   .9965926   .0158221    -0.21   0.830     .9660595    1.028091
pyperstudw~e |   .9998941   .0013313    -0.08   0.937     .9972883    1.002507
pyperstudb~k |   1.002838   .0016002     1.78   0.076     .9997063    1.005979
pyperstudl~o |   .9979372   .0038143    -0.54   0.589     .9904893    1.005441
pyperstudm~e |   .9463346   .0452137    -1.15   0.248       .86174    1.039234
        male |   1.846454    .742786     1.52   0.127     .8393045    4.062163
         age |   .9607399   .0378346    -1.02   0.309      .889375    1.037831
       Asian |   4.17e+08   4.47e+12     0.00   0.999            0           .
       Black |   3.925779   3.215228     1.67   0.095     .7884764    19.54623
      Latino |   2.314485   3.064024     0.63   0.526       .17282    30.99666
       Other |   1.20e-06   .0013498    -0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   .5611853   .6540374    -0.50   0.620     .0571567    5.509918
  LatinoMale |  (omitted)
   OtherMale |   8.08e+11   1.05e+15     0.02   0.983            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9857404   .0183729    -0.77   0.441       .95038    1.022416
       exper |   1.049715   .0293266     1.74   0.082     .9937814    1.108797
pyperstudlep |   1.002927   .0275334     0.11   0.915     .9503887     1.05837
pyperstude~s |   1.016736   .0115032     1.47   0.142     .9944387    1.039534
pyperstudw~e |   .9980597   .0010946    -1.77   0.077     .9959165    1.000207
pyperstudb~k |   .9973313   .0016771    -1.59   0.112     .9940496    1.000624
pyperstudl~o |   .9944342   .0035731    -1.55   0.120     .9874556    1.001462
pyperstudm~e |   .9846358   .0114422    -1.33   0.183     .9624628    1.007319
        male |   2.321764   .6650269     2.94   0.003     1.324363    4.070326
         age |   1.000629   .0273939     0.02   0.982     .9483534    1.055787
       Asian |   .8252101   13530.54    -0.00   1.000            0           .
       Black |   3.538023   2.368438     1.89   0.059     .9526769     13.1394
      Latino |   1.175262   1.216794     0.16   0.876     .1544732    8.941622
       Other |   2.79e-06   .0019104    -0.02   0.985            0           .
   AsianMale |  (omitted)
   BlackMale |   .3996701    .403629    -0.91   0.364     .0552165    2.892908
  LatinoMale |  (omitted)
   OtherMale |   2.15e+11   2.02e+14     0.03   0.978            0           .
------------------------------------------------------------------------------


---------->  region = 9
```

```
note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -231.23655
Iteration 1:   log likelihood = -205.78335
Iteration 2:   log likelihood =  -203.2686
Iteration 3:   log likelihood = -202.90594
Iteration 4:   log likelihood = -202.83806
Iteration 5:   log likelihood = -202.82129
Iteration 6:   log likelihood = -202.81771
Iteration 7:   log likelihood = -202.81689
Iteration 8:   log likelihood = -202.81675
Iteration 9:   log likelihood = -202.81674

Multinomial logistic regression                 Number of obs   =        220
                                                LR chi2(30)     =      56.84
                                                Prob > chi2     =     0.0022
Log likelihood = -202.81674                     Pseudo R2       =     0.1229

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |   .9951939    .021024    -0.23   0.820      .954829    1.037265
       exper |   .9843382   .0354095    -0.44   0.661     .9173269    1.056245
pyperstudlep |   1.001107   .0524854     0.02   0.983     .9033462    1.109447
pyperstude~s |   .9763644   .0133171    -1.75   0.079     .9506091    1.002817
pyperstudw~e |   .9998135   .0009408    -0.20   0.843     .9979714    1.001659
pyperstudb~k |   1.000556    .003469     0.16   0.873     .9937796    1.007378
pyperstudl~o |   1.005077   .0033868     1.50   0.133     .9984605    1.011737
pyperstudm~e |   1.023837   .0182716     1.32   0.187     .9886446    1.060283
        male |   .7363167   .2450732    -0.92   0.358     .3834896     1.41376
         age |    1.01366   .0315204     0.44   0.663      .953726     1.07736
       Asian |  (omitted)
       Black |   .3134613   .3851874    -0.94   0.345     .0281975    3.484633
      Latino |    1143689   1.52e+09     0.01   0.992            0           .
       Other |   3.26e-07   .0005099    -0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |   9.275741   15.61238     1.32   0.186     .3424965    251.2124
  LatinoMale |   6.09e-13   1.16e-09    -0.01   0.988            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.030194   .0350304     0.87   0.382     .9637741    1.101192
       exper |   .9206783   .0489641    -1.55   0.120     .8295428    1.021826
pyperstudlep |   1.038646   .0712849     0.55   0.581     .9079202    1.188195
pyperstude~s |   .9784885   .0175181    -1.21   0.224      .944749    1.013433
pyperstudw~e |   1.001019    .001083     0.94   0.346     .9988987    1.003144
pyperstudb~k |    1.00471   .0034592     1.36   0.172     .9979534    1.011513
pyperstudl~o |   1.005376   .0036913     1.46   0.144     .9981668    1.012636
pyperstudm~e |   1.039799   .0227845     1.78   0.075     .9960881    1.085429
        male |   1.323373   .6190986     0.60   0.549     .5290229    3.310475
         age |   1.001439   .0407191     0.04   0.972     .9247278    1.084513
       Asian |  (omitted)
       Black |   1.237911   1.343621     0.20   0.844      .147503     10.3891
      Latino |    2209163   2.93e+09     0.01   0.991            0           .
       Other |   3.343792   4.325642     0.93   0.351     .2649086     42.2068
   AsianMale |  (omitted)
   BlackMale |   3.75e-07   .0003516    -0.02   0.987            0           .
  LatinoMale |   1.16e-06   .0015397    -0.01   0.992            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |  (base outcome)
------------------------------------------------------------------------------


---------> region = 10
```

```
Iteration 0:   log likelihood = -3158.1555
Iteration 1:   log likelihood = -2948.4363
Iteration 2:   log likelihood = -2938.0219
Iteration 3:   log likelihood = -2937.9418
Iteration 4:   log likelihood = -2937.9418

Multinomial logistic regression                 Number of obs   =       2969
                                                LR chi2(36)     =     440.43
                                                Prob > chi2     =     0.0000
Log likelihood = -2937.9418                     Pseudo R2       =     0.0697

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.013634   .0069201     1.98   0.047     1.000161    1.027289
       exper |   .9885896   .0092071    -1.23   0.218     .9707077    1.006801
pyperstudlep |   1.004739   .0044603     1.07   0.287     .9960351    1.013519
pyperstude~s |   .9976149   .0029047    -0.82   0.412      .991938    1.003324
pyperstudw~e |   1.000099   .0001312     0.75   0.451     .9998419    1.000356
pyperstudb~k |   1.000003   .0002015     0.02   0.987     .9996084    1.000398
pyperstudl~o |   .9999117   .0001929    -0.46   0.647     .9995336     1.00029
pyperstudm~e |   .9962492   .0045504    -0.82   0.411     .9873704    1.005208
        male |   1.481562   .1697091     3.43   0.001     1.183633    1.854483
         age |    .970566   .0076611    -3.78   0.000     .9556661    .9856981
       Asian |   1.341322   1.000965     0.39   0.694     .3106858    5.790881
       Black |   1.953045   .3057827     4.28   0.000     1.436951    2.654498
      Latino |   2.381046   .5502973     3.75   0.000     1.513706    3.745363
       Other |   1.094924   .5919067     0.17   0.867     .3795175    3.158903
   AsianMale |   1.968234   1.922657     0.69   0.488     .2901254    13.35265
   BlackMale |   1.042855   .2483985     0.18   0.860     .6538458    1.663306
  LatinoMale |   1.281687   .4340043     0.73   0.464     .6600072    2.488946
   OtherMale |   .7408755   .5539981    -0.40   0.688     .1710998    3.208048
-------------+----------------------------------------------------------------
3            |
      tenure |    1.02139   .0066013     3.27   0.001     1.008534    1.034411
       exper |   1.052014    .010879     4.90   0.000     1.030907    1.073554
pyperstudlep |   .9996418   .0048673    -0.07   0.941     .9901474    1.009227
pyperstude~s |    .999729   .0029682    -0.09   0.927     .9939283    1.005564
pyperstudw~e |   .9989181   .0001824    -5.93   0.000     .9985606    .9992758
pyperstudb~k |   .9983155   .0002758    -6.10   0.000      .997775    .9988563
pyperstudl~o |   .9987175   .0002921    -4.39   0.000     .9981452    .9992901
pyperstudm~e |   .9915147   .0039913    -2.12   0.034     .9837227    .9993684
        male |   1.520756    .175981     3.62   0.000     1.212158     1.90792
         age |    .973492   .0089159    -2.93   0.003      .956173    .9911246
       Asian |   1.058851   .8210065     0.07   0.941     .2316514    4.839885
       Black |   1.095774   .1929498     0.52   0.603     .7759555    1.547409
      Latino |    2.49434   .5801265     3.93   0.000     1.581195    3.934827
       Other |   .3336367   .2661898    -1.38   0.169     .0698471    1.593674
   AsianMale |   1.495663    1.52678     0.39   0.693     .2022661    11.05972
   BlackMale |   1.148366    .318667     0.50   0.618     .6666149    1.978269
  LatinoMale |   .7820669   .2943695    -0.65   0.514     .3739833    1.635444
   OtherMale |   1.185244   1.240549     0.16   0.871     .1523659    9.219929
------------------------------------------------------------------------------


---------->  region = 11

Iteration 0:   log likelihood = -2208.7232
Iteration 1:   log likelihood =  -1997.548
Iteration 2:   log likelihood = -1989.7612
Iteration 3:   log likelihood = -1989.6428
Iteration 4:   log likelihood = -1989.6233
Iteration 5:   log likelihood = -1989.6201
```

```
Iteration 6:   log likelihood = -1989.6193
Iteration 7:   log likelihood = -1989.6192
Iteration 8:   log likelihood = -1989.6191
Iteration 9:   log likelihood = -1989.6191

Multinomial logistic regression                 Number of obs   =       2049
                                                LR chi2(36)     =     438.21
                                                Prob > chi2     =     0.0000
Log likelihood = -1989.6191                     Pseudo R2       =     0.0992

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |     .96636   .0091209    -3.63   0.000     .9486478    .9844029
       exper |   .9521226   .0084255    -5.54   0.000     .9357513    .9687802
pyperstudlep |   .9995448   .0064148    -0.07   0.943     .9870508    1.012197
pyperstude~s |   .9936406   .0039271    -1.61   0.106     .9859734    1.001367
pyperstudw~e |   .9999992   .0001192    -0.01   0.995     .9997656    1.000233
pyperstudb~k |   .9994759   .0003038    -1.72   0.085     .9988808    1.000071
pyperstudl~o |   1.000308   .0003579     0.86   0.390     .9996065    1.001009
pyperstudm~e |   .9957317   .0046477    -0.92   0.359      .986664    1.004883
        male |   1.285061   .1652489     1.95   0.051     .9987704    1.653414
         age |   1.015192   .0077274     1.98   0.048     1.000159    1.030451
       Asian |   1.469376    1.25812     0.45   0.653     .2743534    7.869647
       Black |   2.144486   .5307778     3.08   0.002     1.320212    3.483394
      Latino |   1.905647   .6109492     2.01   0.044     1.016595    3.572211
       Other |   .8424714   .5961162    -0.24   0.809     .2105047    3.371698
   AsianMale |   .2577976   .3877458    -0.90   0.367     .0135211    4.915253
   BlackMale |   1.050169   .4125228     0.12   0.901      .486288    2.267903
  LatinoMale |   .9587277   .4709672    -0.09   0.932     .3660576    2.510968
   OtherMale |   .8226349   .9462061    -0.17   0.865     .0863263    7.839186
-------------+----------------------------------------------------------------
3            |
      tenure |   .9866023   .0080726    -1.65   0.099     .9709065    1.002552
       exper |   .9777602    .008554    -2.57   0.010     .9611376    .9946703
pyperstudlep |   .9871744   .0067929    -1.88   0.061     .9739499    1.000578
pyperstude~s |   1.002461   .0037925     0.65   0.516     .9950554    1.009922
pyperstudw~e |   .9986771   .0001842    -7.18   0.000     .9983161    .9990383
pyperstudb~k |    .997932   .0004044    -5.11   0.000     .9971396     .998725
pyperstudl~o |   .9992548   .0004641    -1.60   0.109     .9983456    1.000165
pyperstudm~e |   .9874996   .0040832    -3.04   0.002     .9795291     .995535
        male |   1.667995   .2132501     4.00   0.000     1.298285    2.142986
         age |   1.059735    .008776     7.01   0.000     1.042673    1.077076
       Asian |   .7468349   .8747601    -0.25   0.803     .0752005       7.417
       Black |   1.839485    .513389     2.18   0.029     1.064465    3.178787
      Latino |   2.800643   .9250761     3.12   0.002     1.465881    5.350777
       Other |   .3102586   .3394126    -1.07   0.285     .0363528     2.64795
   AsianMale |   3.82e-06   .0025978    -0.02   0.985            0           .
   BlackMale |   .7565958   .3428547    -0.62   0.538     .3112707    1.839033
  LatinoMale |    .386789   .2148619    -1.71   0.087     .1302058    1.148994
   OtherMale |   1.709624   2.415783     0.38   0.704     .1071793    27.27032
------------------------------------------------------------------------------


---------->  region = 12

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -820.52956
Iteration 1:   log likelihood = -758.50063
Iteration 2:   log likelihood = -755.21169
Iteration 3:   log likelihood = -755.00145
Iteration 4:   log likelihood = -754.96505
Iteration 5:   log likelihood = -754.95698
```

```
Iteration 6:   log likelihood = -754.95506
Iteration 7:   log likelihood = -754.95464
Iteration 8:   log likelihood = -754.95456
Iteration 9:   log likelihood = -754.95454

Multinomial logistic regression                 Number of obs   =        781
                                                LR chi2(32)     =     131.15
                                                Prob > chi2     =     0.0000
Log likelihood = -754.95454                     Pseudo R2       =     0.0799

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.017023   .0148929     1.15   0.249     .9882484    1.046636
       exper |    .952302   .0185861    -2.50   0.012     .9165619    .9894357
pyperstudlep |   1.029416   .0211455     1.41   0.158     .9887946    1.071706
pyperstude~s |   1.008953   .0065757     1.37   0.171     .9961469    1.021924
pyperstudw~e |   1.001013   .0004651     2.18   0.029     1.000102    1.001925
pyperstudb~k |   1.001464   .0006088     2.41   0.016     1.000271    1.002658
pyperstudl~o |   .9990222   .0010999    -0.89   0.374     .9968687     1.00118
pyperstudm~e |   1.002464   .0082742     0.30   0.766     .9863769    1.018812
        male |    1.39155   .3004807     1.53   0.126     .9113743    2.124715
         age |   .9930421   .0167523    -0.41   0.679     .9607452    1.026425
       Asian |  (omitted)
       Black |   .9013594   .3850072    -0.24   0.808     .3902251       2.082
      Latino |   2.662063   1.682911     1.55   0.121     .7710865    9.190382
       Other |   1.04e-06    .000913    -0.02   0.987            0           .
   AsianMale |  (omitted)
   BlackMale |   2.703245   1.781222     1.51   0.131     .7430392    9.834655
  LatinoMale |   .7392438   .6850349    -0.33   0.744     .1202278    4.545383
   OtherMale |   688461.8   6.05e+08     0.02   0.988            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |    1.01786   .0118107     1.53   0.127     .9949731    1.041274
       exper |   1.022633   .0178585     1.28   0.200     .9882228     1.05824
pyperstudlep |   1.050985   .0201998     2.59   0.010     1.012131    1.091331
pyperstude~s |   1.009046   .0058035     1.57   0.117     .9977353    1.020485
pyperstudw~e |   1.000147   .0004932     0.30   0.765      .999181    1.001114
pyperstudb~k |   .9995646   .0007536    -0.58   0.563     .9980886    1.001043
pyperstudl~o |   .9958157   .0012919    -3.23   0.001     .9932869     .998351
pyperstudm~e |   .9949811   .0071583    -0.70   0.484     .9810496    1.009111
        male |   1.560896    .295673     2.35   0.019       1.0768    2.262627
         age |   1.000154    .015921     0.01   0.992     .9694314    1.031851
       Asian |  (omitted)
       Black |   1.189544   .4685356     0.44   0.659     .5496806    2.574248
      Latino |   .8563709   .7539856    -0.18   0.860     .1524852    4.809459
       Other |   1.75e-06   .0013147    -0.02   0.986            0           .
   AsianMale |  (omitted)
   BlackMale |   1.285588   .8521978     0.38   0.705     .3506329    4.713582
  LatinoMale |   1.225637   1.540003     0.16   0.871     .1044321    14.38434
   OtherMale |   1.190796   1181.092     0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 13

Iteration 0:   log likelihood = -1342.9199
Iteration 1:   log likelihood = -1262.1826
Iteration 2:   log likelihood =  -1259.541
Iteration 3:   log likelihood = -1259.3708
Iteration 4:   log likelihood = -1259.3307
Iteration 5:   log likelihood = -1259.3231
Iteration 6:   log likelihood = -1259.3218
Iteration 7:   log likelihood = -1259.3215
```

```
Iteration 8:   log likelihood = -1259.3214
Iteration 9:   log likelihood = -1259.3214

Multinomial logistic regression                 Number of obs   =       1236
                                                LR chi2(36)     =     167.20
                                                Prob > chi2     =     0.0000
Log likelihood = -1259.3214                     Pseudo R2       =     0.0623

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.028198   .0112792     2.53   0.011     1.006327    1.050544
       exper |   .9742466   .0136058    -1.87   0.062     .9479414    1.001282
pyperstudlep |   1.007283   .0114225     0.64   0.522     .9851419    1.029921
pyperstude~s |   .9982655   .0059569    -0.29   0.771     .9866581    1.010009
pyperstudw~e |   1.000028   .0002022     0.14   0.889      .999632    1.000425
pyperstudb~k |   1.000844   .0006712     1.26   0.208     .9995296    1.002161
pyperstudl~o |    1.00035   .0002971     1.18   0.239     .9997677    1.000932
pyperstudm~e |   .9918378   .0070149    -1.16   0.247     .9781837    1.005682
        male |     .88353   .1481777    -0.74   0.460     .6360123    1.227375
         age |   .9817723   .0123194    -1.47   0.143     .9579213    1.006217
       Asian |   1.627108   2.329707     0.34   0.734     .0983238    26.92613
       Black |   1.005082   .3257386     0.02   0.988     .5325177    1.897006
      Latino |   1.557984   .4019206     1.72   0.086     .9396681    2.583161
       Other |   .4505796    .573588    -0.63   0.531     .0371699    5.461996
   AsianMale |   1.92e+07   8.52e+10     0.00   0.997            0           .
   BlackMale |   3.234263   1.763757     2.15   0.031     1.110671    9.418144
  LatinoMale |   2.335135   1.019632     1.94   0.052     .9922856    5.495249
   OtherMale |   1.152921   1.992789     0.08   0.934     .0389515    34.12523
-------------+----------------------------------------------------------------
3            |
      tenure |   1.008547   .0105825     0.81   0.417     .9880179    1.029504
       exper |   1.014995   .0142262     1.06   0.288     .9874919    1.043265
pyperstudlep |   1.010688   .0111026     0.97   0.333     .9891594    1.032684
pyperstude~s |   1.004364   .0056827     0.77   0.442     .9932879    1.015564
pyperstudw~e |   .9992603   .0002624    -2.82   0.005     .9987462    .9997746
pyperstudb~k |   .9989306   .0008303    -1.29   0.198     .9973045    1.000559
pyperstudl~o |   .9987316   .0004238    -2.99   0.003     .9979013    .9995626
pyperstudm~e |   .9927845   .0054129    -1.33   0.184     .9822318     1.00345
        male |    1.23183    .197392     1.30   0.193     .8998119    1.686358
         age |   1.005845   .0129357     0.45   0.650     .9808088    1.031521
       Asian |   1.797336   2.569694     0.41   0.682     .1090552    29.62186
       Black |   .7564342   .2867873    -0.74   0.462     .3597946    1.590331
      Latino |    1.02305   .2961469     0.08   0.937     .5800906    1.804255
       Other |   3.88e-07   .0005923    -0.01   0.992            0           .
   AsianMale |   .5645285   3875.686    -0.00   1.000            0           .
   BlackMale |   2.201438   1.409068     1.23   0.218     .6278851    7.718496
  LatinoMale |   2.058338   .9902233     1.50   0.133     .8017176    5.284597
   OtherMale |    1.00555   2136.872     0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -294.41039
Iteration 1:   log likelihood = -262.39258
Iteration 2:   log likelihood = -256.73447
Iteration 3:   log likelihood = -254.63714
Iteration 4:   log likelihood = -254.46036
Iteration 5:   log likelihood = -254.43467
Iteration 6:   log likelihood = -254.42865
```

```
Iteration 7:   log likelihood = -254.42716
Iteration 8:   log likelihood = -254.42687
Iteration 9:   log likelihood = -254.42683
Iteration 10:  log likelihood = -254.42682

Multinomial logistic regression                 Number of obs   =        311
                                                LR chi2(30)     =      79.97
                                                Prob > chi2     =     0.0000
Log likelihood = -254.42682                     Pseudo R2       =     0.1358

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9960974   .0336139    -0.12   0.908     .9323468    1.064207
       exper |    .973346   .0424778    -0.62   0.536     .8935524    1.060265
pyperstudlep |   .8200588   .1254179    -1.30   0.195      .607665    1.106689
pyperstude~s |    .965941   .0205964    -1.63   0.104     .9264046    1.007165
pyperstudw~e |   .9975557   .0016836    -1.45   0.147     .9942614    1.000861
pyperstudb~k |   1.011845   .0073074     1.63   0.103     .9976241     1.02627
pyperstudl~o |   1.001738   .0016803     1.04   0.301       .99845    1.005036
pyperstudm~e |   1.024645    .019394     1.29   0.198     .9873298     1.06337
        male |   2.538642   1.164056     2.03   0.042     1.033465    6.236014
         age |    .996235   .0383822    -0.10   0.922     .9237775    1.074376
       Asian |  (omitted)
       Black |   2.22e-06   .0027456    -0.01   0.992            0           .
      Latino |   1.833729   2.395651     0.46   0.643     .1416755    23.73426
       Other |   3.65e-06   .0064548    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   1.47e+12   2.33e+15     0.02   0.986            0           .
  LatinoMale |   3.452185   5.503882     0.78   0.437     .1517078    78.55618
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9932372   .0192273    -0.35   0.726     .9562584    1.031646
       exper |   1.033819   .0287351     1.20   0.231     .9790062    1.091702
pyperstudlep |   1.045621    .043132     1.08   0.279     .9644107    1.133669
pyperstude~s |   1.004838   .0128149     0.38   0.705     .9800328    1.030272
pyperstudw~e |   .9994061   .0011345    -0.52   0.601      .997185    1.001632
pyperstudb~k |   1.000266   .0052075     0.05   0.959     .9901113    1.010525
pyperstudl~o |   .9970998   .0016388    -1.77   0.077     .9938929    1.000317
pyperstudm~e |   .9953705   .0153751    -0.30   0.764     .9656874    1.025966
        male |   2.661888   .7431033     3.51   0.000     1.540157    4.600602
         age |   .9815822   .0250054    -0.73   0.466     .9337759    1.031836
       Asian |  (omitted)
       Black |   6.378671   7.910188     1.49   0.135     .5612489    72.49448
      Latino |   .4419111   .5233928    -0.69   0.491     .0433695    4.502826
       Other |    .703632   1.037888    -0.24   0.812     .0390649    12.67374
   AsianMale |  (omitted)
   BlackMale |   334115.5   3.30e+08     0.01   0.990            0           .
  LatinoMale |   1.137026   1.979675     0.07   0.941     .0374752    34.49826
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 15

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -311.33607
Iteration 1:   log likelihood = -280.38573
Iteration 2:   log likelihood = -275.11807
Iteration 3:   log likelihood = -274.96158
```

```
Iteration 4:   log likelihood = -274.94033
Iteration 5:   log likelihood = -274.93672
Iteration 6:   log likelihood = -274.93589
Iteration 7:   log likelihood = -274.93569
Iteration 8:   log likelihood = -274.93565
Iteration 9:   log likelihood = -274.93564

Multinomial logistic regression                 Number of obs   =        313
                                                LR chi2(28)     =      72.80
                                                Prob > chi2     =     0.0000
Log likelihood = -274.93564                     Pseudo R2       =     0.1169

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.029125   .0314811     0.94   0.348     .9692363    1.092714
       exper |   1.010845   .0454056     0.24   0.810     .9256565    1.103873
pyperstudlep |   .9987263    .024127    -0.05   0.958     .9525403    1.047152
pyperstude~s |   .9827263   .0130559    -1.31   0.190     .9574675    1.008651
pyperstudw~e |   1.000995   .0010137     0.98   0.326     .9990097    1.002983
pyperstudb~k |   .9986891    .006008    -0.22   0.827     .9869828    1.010534
pyperstudl~o |   1.000211   .0006305     0.34   0.738     .9989763    1.001448
pyperstudm~e |   1.000742   .0210673     0.04   0.972     .9602909    1.042897
        male |    1.44757   .6876963     0.78   0.436     .5705056    3.672988
         age |   .9566197   .0384171    -1.10   0.269     .8842107    1.034958
       Asian |  (omitted)
       Black |   6.29e-07   .0017337    -0.01   0.996            0           .
      Latino |   10.05708   6.481349     3.58   0.000      2.84387    35.56593
       Other |   8.610335   32910.38     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   .4055327   .3226116    -1.13   0.257     .0852851    1.928317
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9972079   .0193774    -0.14   0.886     .9599431    1.035919
       exper |   1.027777   .0275108     1.02   0.306      .975247    1.083137
pyperstudlep |   1.010627   .0199533     0.54   0.592     .9722665    1.050502
pyperstude~s |   1.007631   .0095326     0.80   0.422     .9891194    1.026489
pyperstudw~e |   1.000054   .0010574     0.05   0.959      .997984    1.002129
pyperstudb~k |   .9990122   .0065242    -0.15   0.880     .9863065    1.011882
pyperstudl~o |    .997707   .0009274    -2.47   0.014     .9958909    .9995264
pyperstudm~e |   .9845505   .0127763    -1.20   0.230     .9598253    1.009913
        male |   1.377338   .3985301     1.11   0.269     .7811721    2.428477
         age |   .9957547    .023803    -0.18   0.859     .9501778    1.043518
       Asian |  (omitted)
       Black |   4.04e-07   .0007029    -0.01   0.993            0           .
      Latino |   .9833915   .6388595    -0.03   0.979     .2752606    3.513249
       Other |    3440362   6.24e+09     0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   1.388257   1.080733     0.42   0.673     .3018732    6.384325
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 16

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -482.16848
Iteration 1:   log likelihood = -424.70876
Iteration 2:   log likelihood = -420.34052
Iteration 3:   log likelihood = -419.85638
Iteration 4:   log likelihood = -419.75741
```

```
Iteration 5:   log likelihood = -419.73302
Iteration 6:   log likelihood = -419.72821
Iteration 7:   log likelihood = -419.72742
Iteration 8:   log likelihood = -419.72733
Iteration 9:   log likelihood = -419.72731

Multinomial logistic regression                 Number of obs   =        454
                                                LR chi2(34)     =     124.88
                                                Prob > chi2     =     0.0000
Log likelihood = -419.72731                     Pseudo R2       =     0.1295

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.069556   .0273716     2.63   0.009     1.017232    1.124572
       exper |   .9018406    .026927    -3.46   0.001     .8505793    .9561913
pyperstudlep |   1.006216   .0163525     0.38   0.703     .9746708    1.038782
pyperstude~s |   .9918204   .0083708    -0.97   0.330     .9755488    1.008363
pyperstudw~e |   1.000623   .0004508     1.38   0.167     .9997395    1.001506
pyperstudb~k |   1.001762   .0020644     0.85   0.393     .9977236    1.005816
pyperstudl~o |   1.000568     .00064     0.89   0.375     .9993141    1.001823
pyperstudm~e |   1.020268   .0113607     1.80   0.072     .9982427    1.042779
        male |   .8014609   .2370119    -0.75   0.454     .4489116    1.430882
         age |      1.023   .0237372     0.98   0.327     .9775179    1.070598
       Asian |   3.98e+07   1.99e+11     0.00   0.997            0           .
       Black |   .9274011   .8634384    -0.08   0.935     .1495455    5.751245
      Latino |   3.263981    2.04276     1.89   0.059     .9572465    11.12939
       Other |   .4116435   .5313848    -0.69   0.492     .0327882    5.168035
   AsianMale |  (omitted)
   BlackMale |   3.28e-07   .0003871    -0.01   0.990            0           .
  LatinoMale |   .4197044   .4794863    -0.76   0.447     .0447197    3.939024
   OtherMale |   1.75e+07   2.40e+10     0.01   0.990            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.054702   .0181432     3.10   0.002     1.019735    1.090868
       exper |   1.002118   .0239346     0.09   0.929     .9562882    1.050144
pyperstudlep |   1.030711   .0152993     2.04   0.042     1.001157    1.061137
pyperstude~s |   .9960228    .007284    -0.54   0.586     .9818482    1.010402
pyperstudw~e |   .9996269   .0005214    -0.72   0.474     .9986054    1.000649
pyperstudb~k |   .9967746   .0024726    -1.30   0.193     .9919402    1.001633
pyperstudl~o |   .9983136   .0008463    -1.99   0.046     .9966563    .9999737
pyperstudm~e |   1.004995   .0101495     0.49   0.622      .985298    1.025086
        male |   1.748977   .4368696     2.24   0.025     1.071929    2.853659
         age |   1.020761   .0231334     0.91   0.365      .976413    1.067124
       Asian |   2.015692   15323.86     0.00   1.000            0           .
       Black |   1.10e-06    .000918    -0.02   0.987            0           .
      Latino |   .2894611   .3437231    -1.04   0.296     .0282373    2.967269
       Other |   9.13e-07   .0008419    -0.02   0.988            0           .
   AsianMale |  (omitted)
   BlackMale |   877951.6   7.32e+08     0.02   0.987            0           .
  LatinoMale |    4.13152   6.321736     0.93   0.354     .2059047     82.8998
   OtherMale |   8.41e+11   1.39e+15     0.02   0.987            0           .
------------------------------------------------------------------------------


---------->  region = 17

Iteration 0:   log likelihood = -470.14834
Iteration 1:   log likelihood = -417.69016
Iteration 2:   log likelihood = -413.82625
Iteration 3:   log likelihood = -413.71099
Iteration 4:   log likelihood = -413.68533
Iteration 5:   log likelihood = -413.67956
Iteration 6:   log likelihood = -413.67832
```

```
Iteration 7:   log likelihood = -413.67812
Iteration 8:   log likelihood = -413.67809

Multinomial logistic regression                 Number of obs   =        469
                                                LR chi2(36)     =     112.94
                                                Prob > chi2     =     0.0000
Log likelihood = -413.67809                     Pseudo R2       =     0.1201

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    .997598   .0219126    -0.11   0.913     .9555614    1.041484
       exper |   .9821437   .0323966    -0.55   0.585     .9206566    1.047737
pyperstudlep |   1.029167   .0328029     0.90   0.367     .9668413     1.09551
pyperstude~s |   .9961342   .0119923    -0.32   0.748     .9729048    1.019918
pyperstudw~e |   1.001369   .0008087     1.69   0.090      .999785    1.002955
pyperstudb~k |   1.004014   .0021407     1.88   0.060     .9998267    1.008218
pyperstudl~o |   1.000555   .0007954     0.70   0.485     .9989975    1.002115
pyperstudm~e |   .9999922   .0110932    -0.00   0.999     .9784846    1.021973
        male |     3.7316   1.321619     3.72   0.000     1.863912     7.47076
         age |    1.01958   .0297232     0.67   0.506     .9629571    1.079533
       Asian |   6.27e-06   .0103432    -0.01   0.994            0           .
       Black |   3.777958   3.784786     1.33   0.185     .5302944    26.91517
      Latino |    1.01695   1.122948     0.02   0.988     .1167821    8.855705
       Other |   1.950978   3993.773     0.00   1.000            0           .
   AsianMale |   201109.1   5.29e+08     0.00   0.996            0           .
   BlackMale |   .1777816    .283017    -1.08   0.278     .0078493    4.026664
  LatinoMale |   2.075427   2.757502     0.55   0.583     .1535199    28.05759
   OtherMale |   .9615172   1968.286    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.008094   .0154995     0.52   0.600     .9781686    1.038935
       exper |   1.024069   .0244234     1.00   0.319     .9773017    1.073075
pyperstudlep |   1.031509   .0209022     1.53   0.126     .9913447    1.073301
pyperstude~s |    1.00714   .0088127     0.81   0.416     .9900145    1.024561
pyperstudw~e |   .9994141   .0008277    -0.71   0.479      .997793    1.001038
pyperstudb~k |   .9974981   .0021854    -1.14   0.253     .9932241    1.001791
pyperstudl~o |   .9990976   .0008955    -1.01   0.314     .9973439    1.000854
pyperstudm~e |   .9837579   .0079909    -2.02   0.044     .9682201    .9995451
        male |   2.998015   .7290746     4.51   0.000     1.861374    4.828741
         age |    1.00187    .021726     0.09   0.931      .96018     1.04537
       Asian |   1.68e-06   .0016522    -0.01   0.989            0           .
       Black |   1.368783   1.301683     0.33   0.741     .2122562    8.826912
      Latino |   1.393657   .7937354     0.58   0.560     .4564232    4.255439
       Other |    1864366   1.86e+09     0.01   0.988            0           .
   AsianMale |   1.73e+12   2.43e+15     0.02   0.984            0           .
   BlackMale |   1.271815   1.712538     0.18   0.858     .0908354    17.80709
  LatinoMale |   1.973462    1.64189     0.82   0.414     .3864048    10.07895
   OtherMale |   1.01e-06   .0010097    -0.01   0.989            0           .
------------------------------------------------------------------------------


---------->  region = 18

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -414.30151
Iteration 1:   log likelihood = -366.18828
Iteration 2:   log likelihood = -363.21752
Iteration 3:   log likelihood = -363.15022
Iteration 4:   log likelihood = -363.13427
Iteration 5:   log likelihood = -363.13107
Iteration 6:   log likelihood = -363.13039
```

```
Iteration 7:   log likelihood = -363.13023
Iteration 8:   log likelihood = -363.13019
Iteration 9:   log likelihood = -363.13019

Multinomial logistic regression                 Number of obs   =        407
                                                LR chi2(30)     =     102.34
                                                Prob > chi2     =     0.0000
Log likelihood = -363.13019                     Pseudo R2       =     0.1235

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9942873   .0234073    -0.24   0.808     .9494522     1.04124
       exper |   .9831231   .0315913    -0.53   0.596     .9231149    1.047032
pyperstudlep |   1.019621   .0184477     1.07   0.283     .9840973    1.056426
pyperstude~s |   1.003975   .0145475     0.27   0.784     .9758636    1.032897
pyperstudw~e |   1.000451   .0007241     0.62   0.533      .999033    1.001871
pyperstudb~k |   .9998836    .002425    -0.05   0.962     .9951419    1.004648
pyperstudl~o |   1.000947   .0007522     1.26   0.208      .999474    1.002422
pyperstudm~e |   1.021021   .0128422     1.65   0.098     .9961589    1.046504
        male |   1.866861   .6614984     1.76   0.078     .9321797    3.738732
         age |   .9644714   .0269014    -1.30   0.195      .913161    1.018665
       Asian |  (omitted)
       Black |   3.661946   5.382221     0.88   0.377     .2054191    65.28045
      Latino |   1.419341   .8857496     0.56   0.575     .4177232    4.822641
       Other |    4.01546   21970.87     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   1.55e-07   .0002717    -0.01   0.993            0           .
  LatinoMale |   .8908447   .6816035    -0.15   0.880     .1988522    3.990926
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9973038   .0161495    -0.17   0.868     .9661485    1.029464
       exper |   1.103505    .032522     3.34   0.001     1.041569    1.169124
pyperstudlep |   .9894102   .0150728    -0.70   0.485     .9603047    1.019398
pyperstude~s |   1.031166   .0109936     2.88   0.004     1.009843     1.05294
pyperstudw~e |   .9998232   .0008374    -0.21   0.833     .9981833    1.001466
pyperstudb~k |   .9986894   .0030556    -0.43   0.668     .9927185    1.004696
pyperstudl~o |   .9981424   .0008359    -2.22   0.026     .9965053    .9997822
pyperstudm~e |   .9882921   .0111326    -1.05   0.296     .9667116    1.010354
        male |   1.663939   .4523413     1.87   0.061     .9766485     2.83489
         age |   .9212222   .0252772    -2.99   0.003     .8729883     .972121
       Asian |  (omitted)
       Black |    4.78073   5.779326     1.29   0.196     .4471922    51.10862
      Latino |   1.714279   .8436173     1.10   0.273     .6534237    4.497467
       Other |   2.10e+07   5.83e+10     0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   .3946226   .6860227    -0.53   0.593     .0130746    11.91061
  LatinoMale |    .549913   .3516557    -0.94   0.350      .157026    1.925822
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 19

note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood =  -804.5742
Iteration 1:   log likelihood = -738.76377
Iteration 2:   log likelihood = -735.66455
Iteration 3:   log likelihood = -735.57798
Iteration 4:   log likelihood = -735.55773
Iteration 5:   log likelihood = -735.55377
Iteration 6:   log likelihood = -735.55312
Iteration 7:   log likelihood = -735.55296
```

```
Iteration 8:   log likelihood = -735.55292

Multinomial logistic regression                 Number of obs   =        750
                                                LR chi2(34)     =     138.04
                                                Prob > chi2     =     0.0000
Log likelihood = -735.55292                     Pseudo R2       =     0.0858

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.001875    .013291     0.14   0.888     .9761612    1.028267
       exper |   1.056046   .0189696     3.04   0.002     1.019513    1.093888
pyperstudlep |   1.014864   .0060426     2.48   0.013     1.003089    1.026776
pyperstude~s |   .9966752   .0078584    -0.42   0.673     .9813915    1.012197
pyperstudw~e |   1.000108   .0007695     0.14   0.888     .9986011    1.001617
pyperstudb~k |   1.003347   .0020972     1.60   0.110     .9992451    1.007466
pyperstudl~o |   .9999422   .0001885    -0.31   0.759     .9995729    1.000312
pyperstudm~e |   .9909506   .0083553    -1.08   0.281     .9747091    1.007463
        male |   1.291283   .3492885     0.95   0.345     .7599307    2.194164
         age |   .9811853   .0149683    -1.25   0.213     .9522822    1.010966
       Asian |   908730.2   7.71e+08     0.02   0.987            0           .
       Black |   1.070164    .727154     0.10   0.921      .282538    4.053441
      Latino |    1.14438   .2878127     0.54   0.592     .6990247    1.873477
       Other |   2.14e-06    .001653    -0.02   0.987            0           .
   AsianMale |   6.52e-12   6.46e-09    -0.03   0.979            0           .
   BlackMale |   .6739221   .6856128    -0.39   0.698     .0917576    4.949681
  LatinoMale |   .9842516   .3518744    -0.04   0.965     .4884248    1.983419
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.033776   .0154234     2.23   0.026     1.003984    1.064451
       exper |   1.108792   .0256077     4.47   0.000      1.05972    1.160135
pyperstudlep |   1.016875   .0066751     2.55   0.011     1.003875    1.030042
pyperstude~s |   1.002763     .00898     0.31   0.758     .9853159    1.020519
pyperstudw~e |    .999365   .0011202    -0.57   0.571     .9971717    1.001563
pyperstudb~k |   1.002512   .0028553     0.88   0.378     .9969315    1.008124
pyperstudl~o |   .9991872   .0002549    -3.19   0.001     .9986878     .999687
pyperstudm~e |   .9980049   .0074693    -0.27   0.790     .9834722    1.012752
        male |   1.008875   .3365758     0.03   0.979     .5246431    1.940041
         age |   .9781964    .019415    -1.11   0.267     .9408745    1.016999
       Asian |      .9585   1352.215    -0.00   1.000            0           .
       Black |   .9687135   .7404068    -0.04   0.967     .2165734    4.332968
      Latino |   1.060659   .3070389     0.20   0.839     .6014095      1.8706
       Other |   2.85e-06   .0026052    -0.01   0.989            0           .
   AsianMale |   2.005456   2829.223     0.00   1.000            0           .
   BlackMale |   2.550443   2.771008     0.86   0.389     .3032501    21.45014
  LatinoMale |   1.268365   .5471226     0.55   0.582       .54459    2.954058
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 20

Iteration 0:   log likelihood = -2101.9227
Iteration 1:   log likelihood = -1951.7321
Iteration 2:   log likelihood = -1938.4313
Iteration 3:   log likelihood = -1937.9159
Iteration 4:   log likelihood = -1937.8163
Iteration 5:   log likelihood = -1937.7927
Iteration 6:   log likelihood = -1937.7875
Iteration 7:   log likelihood = -1937.7863
Iteration 8:   log likelihood = -1937.7861
Iteration 9:   log likelihood = -1937.7861
```

```
Multinomial logistic regression                 Number of obs   =       2110
                                                LR chi2(36)     =     328.27
                                                Prob > chi2     =     0.0000
Log likelihood = -1937.7861                     Pseudo R2       =     0.0781

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9943409   .0083219    -0.68   0.498     .9781632    1.010786
       exper |   1.007961   .0111668     0.72   0.474     .9863108    1.030087
pyperstudlep |   .9949174   .0072908    -0.70   0.487     .9807297     1.00931
pyperstude~s |   .9981724   .0039291    -0.46   0.642     .9905012    1.005903
pyperstudw~e |   1.000018   .0002017     0.09   0.928     .9996229    1.000414
pyperstudb~k |   1.000339   .0004802     0.71   0.480      .999398     1.00128
pyperstudl~o |   1.000075   .0001236     0.61   0.541     .9998333    1.000318
pyperstudm~e |   .9982987   .0043142    -0.39   0.694     .9898788     1.00679
        male |   1.488839   .2159342     2.74   0.006     1.120453    1.978345
         age |   .9786924   .0093805    -2.25   0.025     .9604784    .9972517
       Asian |   3.59e-07   .0003639    -0.01   0.988            0           .
       Black |   1.306178   .4058354     0.86   0.390     .7104447    2.401456
      Latino |   1.279398   .2118973     1.49   0.137     .9247565    1.770043
       Other |   .5723525   .6315835    -0.51   0.613     .0658224    4.976837
   AsianMale |    5088989   5.16e+09     0.02   0.988            0           .
   BlackMale |   .8610292   .3994963    -0.32   0.747     .3468019    2.137738
  LatinoMale |   1.489433   .3606044     1.65   0.100     .9266968    2.393889
   OtherMale |   1.929785   3.196087     0.40   0.691     .0751206    49.57456
-------------+----------------------------------------------------------------
3            |
      tenure |   1.024528   .0088175     2.82   0.005     1.007391    1.041956
       exper |   1.083939   .0150893     5.79   0.000     1.054764    1.113921
pyperstudlep |   1.003706   .0067882     0.55   0.584     .9904893    1.017099
pyperstude~s |   .9992362     .00434    -0.18   0.860     .9907661    1.007779
pyperstudw~e |   .9987156   .0003544    -3.62   0.000     .9980212    .9994104
pyperstudb~k |   .9987413   .0006883    -1.83   0.068     .9973932    1.000091
pyperstudl~o |   .9986453    .000189    -7.16   0.000     .9982748    .9990159
pyperstudm~e |   .9911964   .0039752    -2.20   0.027     .9834357    .9990184
        male |   1.729926   .2781366     3.41   0.001     1.262327    2.370736
         age |   .9618645   .0119472    -3.13   0.002     .9387312    .9855678
       Asian |   1.07e-06   .0010127    -0.01   0.988            0           .
       Black |   1.473094   .4649813     1.23   0.220     .7935041    2.734713
      Latino |   1.141777   .2032342     0.74   0.456     .8055069    1.618429
       Other |   1.11e-06   .0009533    -0.02   0.987            0           .
   AsianMale |   1.580973   3310.187     0.00   1.000            0           .
   BlackMale |   .8710177   .4253689    -0.28   0.777     .3344533    2.268394
  LatinoMale |    1.07634   .2888166     0.27   0.784     .6361279    1.821185
   OtherMale |    2058041   1.76e+09     0.02   0.986            0           .
------------------------------------------------------------------------------
by pyschooltype:

. bysort pyschooltype: mlogit admin  tenure exper  pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile male age A
> sian Black Latino Other AsianMale BlackMale LatinoMale OtherMale if validcert2000a==1,
rrr


---------->  pyschooltype =

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -390.91498
Iteration 1:   log likelihood = -360.32551
Iteration 2:   log likelihood = -359.15378
Iteration 3:   log likelihood = -359.07322
Iteration 4:   log likelihood = -359.05542
Iteration 5:   log likelihood = -359.05172
```

```
Iteration 6:   log likelihood = -359.05111
Iteration 7:   log likelihood = -359.05097
Iteration 8:   log likelihood = -359.05094
Iteration 9:   log likelihood = -359.05093

Multinomial logistic regression                 Number of obs   =        366
                                                LR chi2(34)     =      63.73
                                                Prob > chi2     =     0.0015
Log likelihood = -359.05093                     Pseudo R2       =     0.0815

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.00606   .0224716     0.27   0.787     .9629671    1.051082
       exper |    .987492   .0287193    -0.43   0.665     .9327774    1.045416
pyperstudlep |    1.02699   .0121827     2.25   0.025     1.003388    1.051148
pyperstude~s |    .995618   .0088306    -0.50   0.621       .97846    1.013077
pyperstudw~e |   1.000113   .0003469     0.33   0.744     .9994335    1.000793
pyperstudb~k |   1.000127   .0007597     0.17   0.867     .9986392    1.001617
pyperstudl~o |   1.000453     .00036     1.26   0.208      .999748    1.001159
pyperstudm~e |   1.012601   .0120087     1.06   0.291     .9893357    1.036413
        male |   2.294448   .8608935     2.21   0.027     1.099768    4.786909
         age |   1.006159   .0250946     0.25   0.806     .9581577    1.056566
       Asian |   4.74e+07   1.73e+11     0.00   0.996            0           .
       Black |   3.315975   2.017206     1.97   0.049     1.006468    10.92503
      Latino |   1.111331   .5550974     0.21   0.833     .4175208    2.958074
       Other |   1.454146   4257.713     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   2.184661   2.807836     0.61   0.543     .1759452    27.12631
  LatinoMale |   .5333298   .4145542    -0.81   0.419     .1162416    2.446978
   OtherMale |    1167176   3.61e+09     0.00   0.996            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9848259    .017727    -0.85   0.396     .9506875     1.02019
       exper |   1.040653    .025424     1.63   0.103      .991997    1.091695
pyperstudlep |   1.020034   .0109389     1.85   0.064     .9988177      1.0417
pyperstude~s |   .9968391    .007447    -0.42   0.672     .9823495    1.011542
pyperstudw~e |   .9990106   .0003828    -2.58   0.010     .9982606    .9997611
pyperstudb~k |   .9998184   .0007247    -0.25   0.802     .9983989     1.00124
pyperstudl~o |    .999798   .0003616    -0.56   0.576     .9990896    1.000507
pyperstudm~e |   .9951692   .0104665    -0.46   0.645     .9748652    1.015896
        male |    1.10126   .3404768     0.31   0.755     .6007913    2.018627
         age |   1.005635    .021817     0.26   0.796     .9637708    1.049318
       Asian |   1.634297    8554.04     0.00   1.000            0           .
       Black |   .7433554   .4582643    -0.48   0.630     .2220481    2.488547
      Latino |    .433066   .1896556    -1.91   0.056     .1835614    1.021708
       Other |    1874750   3.28e+09     0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |   6.663915   8.820391     1.43   0.152     .4978229    89.20394
  LatinoMale |   1.663944   1.162695     0.73   0.466     .4230136    6.545205
   OtherMale |   1.110442   2241.984     0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  pyschooltype = B

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -735.10421
Iteration 1:   log likelihood = -675.63087
Iteration 2:   log likelihood = -669.21206
Iteration 3:   log likelihood = -669.05932
Iteration 4:   log likelihood = -669.02885
Iteration 5:   log likelihood = -669.02216
Iteration 6:   log likelihood = -669.02053
```

```
Iteration 7:   log likelihood =  -669.0202
Iteration 8:   log likelihood = -669.02012
Iteration 9:   log likelihood = -669.02011

Multinomial logistic regression                 Number of obs   =        764
                                                LR chi2(34)     =     132.17
                                                Prob > chi2     =     0.0000
Log likelihood = -669.02011                     Pseudo R2       =     0.0899

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.04447   .0183229     2.48   0.013     1.009168    1.081007
       exper |   .9960698   .0222953    -0.18   0.860     .9533166     1.04074
pyperstudlep |   1.013275   .0093212     1.43   0.152     .9951696     1.03171
pyperstude~s |   1.001231   .0060493     0.20   0.839     .9894444    1.013158
pyperstudw~e |   1.001307   .0005019     2.61   0.009     1.000324    1.002291
pyperstudb~k |    1.00059   .0004228     1.39   0.163     .9997613    1.001419
pyperstudl~o |   1.000862     .00044     1.96   0.050            1    1.001725
pyperstudm~e |   1.013477   .0044892     3.02   0.003     1.004716    1.022314
        male |   1.150037   .3641508     0.44   0.659     .6182796    2.139137
         age |   .9445129   .0189071    -2.85   0.004     .9081732    .9823067
       Asian |   1.155219   3110.897     0.00   1.000            0           .
       Black |   2.090773   .8476418     1.82   0.069     .9445226    4.628084
      Latino |    3.35402   1.822912     2.23   0.026     1.155945    9.731822
       Other |   7.74e-06   .0039867    -0.02   0.982            0           .
   AsianMale |  (omitted)
   BlackMale |   1.926742   1.010106     1.25   0.211     .6895667    5.383576
  LatinoMale |   1.164813    .815365     0.22   0.827     .2954052    4.592977
   OtherMale |   597782.6   3.08e+08     0.03   0.979            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.019512   .0119664     1.65   0.100     .9963264    1.043238
       exper |   1.016422   .0156984     1.05   0.292     .9861147    1.047661
pyperstudlep |   1.000314   .0083853     0.04   0.970     .9840129    1.016884
pyperstude~s |   1.006431   .0046278     1.39   0.163     .9974009    1.015542
pyperstudw~e |   1.000441   .0005066     0.87   0.384     .9994489    1.001435
pyperstudb~k |    .998822   .0005239    -2.25   0.025     .9977958    .9998493
pyperstudl~o |   .9989705   .0005953    -1.73   0.084     .9978044    1.000138
pyperstudm~e |   1.001968   .0032619     0.60   0.546     .9955951    1.008382
        male |   1.374329   .2747425     1.59   0.112     .9288095    2.033549
         age |   .9815083   .0144053    -1.27   0.203     .9536766    1.010152
       Asian |    2097276   2.58e+09     0.01   0.991            0           .
       Black |   .6357858   .2656776    -1.08   0.278     .2802959    1.442131
      Latino |   .9741818   .5638155    -0.05   0.964     .3133288    3.028863
       Other |   1.327684   1.573527     0.24   0.811     .1301004     13.5491
   AsianMale |  (omitted)
   BlackMale |   2.533404   1.309382     1.80   0.072     .9199483    6.976625
  LatinoMale |   1.949038   1.363356     0.95   0.340     .4947698    7.677812
   OtherMale |   2.192797   3.305204     0.52   0.602     .1142831     42.0741
------------------------------------------------------------------------------


---------->  pyschooltype = E

Iteration 0:   log likelihood = -9523.5672
Iteration 1:   log likelihood = -8900.4786
Iteration 2:   log likelihood =  -8890.877
Iteration 3:   log likelihood = -8890.8617
Iteration 4:   log likelihood = -8890.8617

Multinomial logistic regression                 Number of obs   =       8912
                                                LR chi2(36)     =    1265.41
                                                Prob > chi2     =     0.0000
```

```
Log likelihood = -8890.8617                     Pseudo R2       =     0.0664

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.002648   .0046812     0.57   0.571     .9935149    1.011865
       exper |   .9864867   .0056769    -2.36   0.018     .9754228    .9976762
pyperstudlep |    1.01188   .0022172     5.39   0.000     1.007543    1.016235
pyperstude~s |   .9902936   .0020299    -4.76   0.000     .9863231    .9942802
pyperstudw~e |   1.001465   .0002207     6.64   0.000     1.001033    1.001898
pyperstudb~k |    1.00095   .0002311     4.11   0.000     1.000497    1.001403
pyperstudl~o |   1.000975   .0001775     5.50   0.000     1.000628    1.001323
pyperstudm~e |   1.016827   .0042237     4.02   0.000     1.008582    1.025139
        male |   1.815686     .16612     6.52   0.000      1.51762    2.172294
         age |   .9926265   .0046565    -1.58   0.115     .9835418    1.001795
       Asian |   1.114436   .5118884     0.24   0.814     .4529775    2.741785
       Black |   1.424104   .1544223     3.26   0.001     1.151442    1.761333
      Latino |    1.14996   .1076634     1.49   0.136     .9571724    1.381578
       Other |   .8468965   .3616541    -0.39   0.697     .3667227    1.955793
   AsianMale |   .6786261   .5451373    -0.48   0.629     .1405608      3.2764
   BlackMale |   .7272151   .1623206    -1.43   0.154     .4695345    1.126311
  LatinoMale |   .7169698   .1219172    -1.96   0.050     .5137576    1.000561
   OtherMale |   .1438303   .1637916    -1.70   0.089     .0154353    1.340247
-------------+----------------------------------------------------------------
3            |
      tenure |   1.010576     .00375     2.84   0.005     1.003252    1.017952
       exper |   1.040813   .0053825     7.74   0.000     1.030317    1.051416
pyperstudlep |   1.005776   .0020008     2.90   0.004     1.001863    1.009705
pyperstude~s |   .9978531   .0018031    -1.19   0.234     .9943253    1.001394
pyperstudw~e |    .999681   .0002134    -1.49   0.135     .9992629    1.000099
pyperstudb~k |   .9987572   .0002291    -5.42   0.000     .9983082    .9992063
pyperstudl~o |   .9988958   .0001763    -6.26   0.000     .9985504    .9992413
pyperstudm~e |   1.002935   .0036499     0.81   0.421     .9958069    1.010115
        male |    3.00092   .2274528    14.50   0.000     2.586653    3.481535
         age |    1.00823   .0045282     1.83   0.068     .9993944    1.017145
       Asian |   .5050656   .2966494    -1.16   0.245     .1597335     1.59698
       Black |   1.065695     .11079     0.61   0.541     .8692438    1.306544
      Latino |   1.197855   .1008976     2.14   0.032     1.015561    1.412871
       Other |   .4803032   .2170843    -1.62   0.105     .1980591    1.164759
   AsianMale |   .7188723   .6285652    -0.38   0.706     .1295332    3.989538
   BlackMale |    .561942   .1148444    -2.82   0.005     .3764705    .8387878
  LatinoMale |   .5284179   .0786737    -4.28   0.000     .3946808    .7074717
   OtherMale |    .418951    .308321    -1.18   0.237     .0990225    1.772527
------------------------------------------------------------------------------


---------> pyschooltype = M

Iteration 0:   log likelihood = -5411.0182
Iteration 1:   log likelihood = -5083.7705
Iteration 2:   log likelihood = -5073.2216
Iteration 3:   log likelihood = -5072.6541
Iteration 4:   log likelihood = -5072.5611
Iteration 5:   log likelihood = -5072.5399
Iteration 6:   log likelihood = -5072.5348
Iteration 7:   log likelihood = -5072.5338
Iteration 8:   log likelihood = -5072.5336
Iteration 9:   log likelihood = -5072.5335
Iteration 10:  log likelihood = -5072.5335

Multinomial logistic regression                 Number of obs   =       5151
                                                LR chi2(36)     =     676.97
                                                Prob > chi2     =     0.0000
Log likelihood = -5072.5335                     Pseudo R2       =     0.0626
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.005518   .0052337     1.06   0.290     .9953123    1.015828
       exper |   .9945941   .0063372    -0.85   0.395     .9822507    1.007093
pyperstudlep |   1.007374   .0036751     2.01   0.044     1.000197    1.014603
pyperstude~s |   1.000005   .0025213     0.00   0.998     .9950755    1.004959
pyperstudw~e |   1.000626   .0001607     3.90   0.000     1.000311    1.000941
pyperstudb~k |   1.000825   .0001942     4.25   0.000     1.000445    1.001206
pyperstudl~o |   1.000164   .0001362     1.20   0.229     .9998969    1.000431
pyperstudm~e |   1.005122   .0036888     1.39   0.164     .9979176    1.012377
        male |   1.727144     .14351     6.58   0.000     1.467579    2.032618
         age |   .9731939   .0052394    -5.05   0.000     .9629788    .9835173
       Asian |   .7671465   .5340871    -0.38   0.703     .1960072     3.00251
       Black |   1.109064   .1480532     0.78   0.438     .8537415    1.440744
      Latino |   1.880089   .2512218     4.72   0.000     1.446901    2.442969
       Other |   .4539517   .2916644    -1.23   0.219     .1288581    1.599217
   AsianMale |   .4123797     .54634    -0.67   0.504     .0307316    5.533615
   BlackMale |   1.183828   .2300434     0.87   0.385     .8088752    1.732588
  LatinoMale |    1.02766   .1798194     0.16   0.876     .7293005    1.448079
   OtherMale |   2.647535   2.102873     1.23   0.220     .5581525    12.55829
-------------+----------------------------------------------------------------
3            |
      tenure |   1.004039   .0052064     0.78   0.437     .9938861    1.014295
       exper |   1.048788   .0077384     6.46   0.000      1.03373    1.064065
pyperstudlep |   1.003634   .0045528     0.80   0.424     .9947503    1.012597
pyperstude~s |   .9980009   .0029409    -0.68   0.497     .9922535    1.003782
pyperstudw~e |   .9992376   .0002089    -3.65   0.000     .9988282    .9996471
pyperstudb~k |   .9988382   .0002789    -4.16   0.000     .9982918    .9993849
pyperstudl~o |   .9986623   .0001892    -7.06   0.000     .9982915    .9990333
pyperstudm~e |   .9878494   .0043188    -2.80   0.005     .9794209    .9963504
        male |   2.249856    .202144     9.02   0.000     1.886585    2.683076
         age |   .9792304   .0066358    -3.10   0.002     .9663106     .992323
       Asian |   3.83e-07   .0004419    -0.01   0.990            0           .
       Black |   .8974485   .1648802    -0.59   0.556     .6260743    1.286451
      Latino |    1.98938   .3220813     4.25   0.000     1.448464    2.732295
       Other |   2.96e-07   .0002897    -0.02   0.988            0           .
   AsianMale |    5500742   6.35e+09     0.01   0.989            0           .
   BlackMale |   1.309504   .3206035     1.10   0.271     .8104176    2.115948
  LatinoMale |    .830908   .1685428    -0.91   0.361     .5583335    1.236551
   OtherMale |    3209440   3.14e+09     0.02   0.988            0           .
------------------------------------------------------------------------------


---------> pyschooltype = S

Iteration 0:   log likelihood = -6411.2402
Iteration 1:   log likelihood = -6038.2462
Iteration 2:   log likelihood = -6017.5025
Iteration 3:   log likelihood = -6017.3854
Iteration 4:   log likelihood = -6017.3854

Multinomial logistic regression                 Number of obs   =       6683
                                                LR chi2(36)     =     787.71
                                                Prob > chi2     =     0.0000
Log likelihood = -6017.3854                     Pseudo R2       =     0.0614

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
```

```
      tenure |    .998013   .0040935    -0.48   0.628     .9900221    1.006068
       exper |   .9984896    .005297    -0.28   0.776     .9881614    1.008926
pyperstudlep |   1.018113   .0038675     4.73   0.000     1.010561    1.025721
pyperstude~s |    .995832   .0021726    -1.91   0.056     .9915829    1.000099
pyperstudw~e |   1.000198   .0000615     3.21   0.001     1.000077    1.000318
pyperstudb~k |   1.000311   .0000951     3.27   0.001     1.000124    1.000497
pyperstudl~o |   1.000083   .0000605     1.37   0.169     .9999646    1.000202
pyperstudm~e |   1.000015   .0024388     0.01   0.995     .9952461    1.004806
        male |   1.238845   .0887255     2.99   0.003       1.0766    1.425541
         age |   .9764511    .004805    -4.84   0.000     .9670787    .9859144
       Asian |     .73212   .4886041    -0.47   0.640     .1979271    2.708066
       Black |   1.589258   .2146953     3.43   0.001     1.219563    2.071021
      Latino |   1.511835   .1946314     3.21   0.001     1.174687    1.945749
       Other |   .7210134   .3696938    -0.64   0.524     .2639348    1.969654
   AsianMale |   2.125699   1.778579     0.90   0.367     .4123808    10.95734
   BlackMale |   1.530316   .2727212     2.39   0.017     1.079161     2.17008
  LatinoMale |   1.439534   .2261666     2.32   0.020     1.058008    1.958642
   OtherMale |    2.79651   1.818786     1.58   0.114     .7816532    10.00503
-------------+----------------------------------------------------------------
3            |
      tenure |   .9949092    .004729    -1.07   0.283     .9856835    1.004221
       exper |   1.037573   .0072189     5.30   0.000      1.02352    1.051819
pyperstudlep |   .9998563   .0053602    -0.03   0.979     .9894055    1.010418
pyperstude~s |   .9951799   .0025502    -1.89   0.059      .990194    1.000191
pyperstudw~e |   .9992241   .0000949    -8.18   0.000     .9990383    .9994101
pyperstudb~k |   .9992785   .0001638    -4.40   0.000     .9989575    .9995997
pyperstudl~o |   .9993807   .0000918    -6.75   0.000     .9992008    .9995606
pyperstudm~e |   1.006763   .0021219     3.20   0.001     1.002613    1.010931
        male |   2.181674   .2100151     8.10   0.000     1.806552    2.634689
         age |   .9883409   .0067579    -1.72   0.086     .9751841    1.001675
       Asian |   1.114512   1.180523     0.10   0.918     .1397875    8.885902
       Black |   1.124239    .243572     0.54   0.589      .735261    1.718999
      Latino |   1.425164   .2756529     1.83   0.067     .9754993    2.082107
       Other |   .3782695   .3951543    -0.93   0.352     .0488208    2.930879
   AsianMale |   .3337884   .5004743    -0.73   0.464     .0176685     6.30583
   BlackMale |   .8975854   .2493346    -0.39   0.697     .5207459    1.547126
  LatinoMale |   .9796203   .2212871    -0.09   0.927     .6291862    1.525233
   OtherMale |   3.614169   4.155642     1.12   0.264     .3795598    34.41411
------------------------------------------------------------------------------
```

2000-01

```
. mlogit admin  tenure exper  pyperstudlep pyperstudecodis pyperstudwhite pyperstudblack
pyperstudlatino pyperstudmobile male age Asian Black Latino Oth
> er AsianMale BlackMale LatinoMale OtherMale if validcert2001a==1, rrr

Iteration 0:   log likelihood =  -23369.36
Iteration 1:   log likelihood = -22278.242
Iteration 2:   log likelihood = -22261.688
Iteration 3:   log likelihood = -22261.665
Iteration 4:   log likelihood = -22261.665

Multinomial logistic regression                 Number of obs   =      21988
                                                LR chi2(36)     =    2215.39
                                                Prob > chi2     =     0.0000
Log likelihood = -22261.665                     Pseudo R2       =     0.0474

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.009688   .0025434     3.83   0.000     1.004716    1.014685
       exper |   .9952566   .0033398    -1.42   0.157     .9887323    1.001824
pyperstudlep |   1.009308   .0014685     6.37   0.000     1.006434     1.01219
pyperstude~s |   .9905205   .0012209    -7.73   0.000     .9881304    .9929163
```

```
pyperstudw~e |   .9780649   .0040851    -5.31   0.000     .9700909    .9861044
pyperstudb~k |   .9836431   .0044373    -3.66   0.000     .9749845    .9923787
pyperstudl~o |   .9815405   .0042476    -4.31   0.000     .9732506     .989901
pyperstudm~e |   .9995711   .0014267    -0.30   0.764     .9967788    1.002371
        male |    1.27822   .0538767     5.82   0.000     1.176868    1.388301
         age |   .9703606   .0028043   -10.41   0.000     .9648797    .9758726
       Asian |   .6726266   .2176616    -1.23   0.220     .3567186    1.268301
       Black |   1.309104   .0894768     3.94   0.000     1.144972    1.496764
      Latino |   1.297438   .0820778     4.12   0.000     1.146142    1.468706
       Other |   .7654702   .1996542    -1.02   0.306     .4591062    1.276273
   AsianMale |   1.537636   .7376455     0.90   0.370     .6004951    3.937294
   BlackMale |   1.487578   .1543072     3.83   0.000     1.213903    1.822952
  LatinoMale |   1.385976   .1214885     3.72   0.000     1.167194    1.645766
   OtherMale |   1.523262   .5684939     1.13   0.259     .7329915    3.165556
-------------+----------------------------------------------------------------
3            |
      tenure |   1.011401   .0023294     4.92   0.000     1.006846    1.015977
       exper |   1.055779   .0037544    15.26   0.000     1.048446    1.063163
pyperstudlep |   1.011762    .001475     8.02   0.000     1.008875    1.014657
pyperstude~s |   1.019707   .0012633    15.75   0.000     1.017234    1.022186
pyperstudw~e |    1.00794   .0049073     1.62   0.104     .9983679    1.017604
pyperstudb~k |   .9868559   .0051691    -2.53   0.012     .9767765    .9970392
pyperstudl~o |   .9846089    .004955    -3.08   0.002     .9749451    .9943685
pyperstudm~e |   1.006572   .0013943     4.73   0.000     1.003843    1.009309
        male |   1.454919   .0596426     9.15   0.000     1.342595    1.576641
         age |     .97295   .0031424    -8.49   0.000     .9668104    .9791285
       Asian |   .3771337   .1714368    -2.15   0.032      .154724    .9192486
       Black |   .9265339   .0710373    -1.00   0.320     .7972595     1.07677
      Latino |   1.180502    .077738     2.52   0.012     1.037561    1.343135
       Other |   .5168952   .1636722    -2.08   0.037     .2778906    .9614597
   AsianMale |    1.45366   .9287767     0.59   0.558     .4155377    5.085282
   BlackMale |   1.259218   .1484466     1.96   0.051     .9994354    1.586527
  LatinoMale |   1.057613   .0975545     0.61   0.544     .8826971     1.26719
   OtherMale |   1.875162   .7972935     1.48   0.139     .8149284    4.314775
------------------------------------------------------------------------------
. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=21988)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     29.309    2    0.000
       exper |    289.194    2    0.000
pyperstudlep |     77.827    2    0.000
pyperstude~s |    452.631    2    0.000
pyperstudw~e |     42.605    2    0.000
pyperstudb~k |     15.109    2    0.001
pyperstudl~o |     21.334    2    0.000
pyperstudm~e |     25.664    2    0.000
        male |     92.257    2    0.000
         age |    142.332    2    0.000
       Asian |      6.042    2    0.049
       Black |     21.056    2    0.000
      Latino |     18.336    2    0.000
       Other |      5.083    2    0.079
   AsianMale |      0.954    2    0.621
   BlackMale |     15.012    2    0.001
  LatinoMale |     14.752    2    0.001
   OtherMale |      2.778    2    0.249
-----------------------------------------

**** Wald tests for independent variables (N=21988)

 Ho: All coefficients associated with given variable(s) are 0.
```

```
             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     29.283    2    0.000
       exper |    272.054    2    0.000
pyperstudlep |     76.661    2    0.000
pyperstude~s |    435.602    2    0.000
pyperstudw~e |     43.162    2    0.000
pyperstudb~k |     14.994    2    0.001
pyperstudl~o |     21.125    2    0.000
pyperstudm~e |     26.632    2    0.000
        male |     91.933    2    0.000
         age |    140.578    2    0.000
       Asian |      5.322    2    0.070
       Black |     21.303    2    0.000
      Latino |     18.354    2    0.000
       Other |      4.691    2    0.096
   AsianMale |      0.949    2    0.622
   BlackMale |     14.907    2    0.001
  LatinoMale |     14.744    2    0.001
   OtherMale |      2.736    2    0.255
-----------------------------------------

**** Hausman tests of IIA assumption (N=21988)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+-----------------------------------
       2 |   -33.805   17     ---    ---
       3 |   -20.676   18     ---    ---
-------------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=21988)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+-----------------------------------------------------------
       2 |  -5045.344  -5033.460  23.767   19    0.205   for Ho
       3 |  -5087.934  -5079.017  17.833   19    0.534   for Ho
-------------------------------------------------------------------

**** Wald tests for combining alternatives (N=21988)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+-------------------------
       2-       3  | 1448.522   18    0.000
       2-       1  |  642.742   18    0.000
       3-       1  | 1065.756   18    0.000
-----------------------------------------------

**** LR tests for combining alternatives (N=21988)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+-------------------------
       2-       3  | 1625.068   18    0.000
       2-       1  |  670.060   18    0.000
       3-       1  | 1168.255   18    0.000
-----------------------------------------------
```

by region:
. bysort region: mlogit admin tenure exper pyperstudlep pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile male age Asian B
> lack Latino Other AsianMale BlackMale LatinoMale OtherMale if validcert2001a==1, rrr

---------> region = 1

Iteration 0: log likelihood = -1574.4108
Iteration 1: log likelihood = -1472.908
Iteration 2: log likelihood = -1469.1747
Iteration 3: log likelihood = -1468.8221
Iteration 4: log likelihood = -1468.7533
Iteration 5: log likelihood = -1468.7373
Iteration 6: log likelihood = -1468.7339
Iteration 7: log likelihood = -1468.7334
Iteration 8: log likelihood = -1468.7334
Iteration 9: log likelihood = -1468.7334

Multinomial logistic regression Number of obs = 1470
LR chi2(36) = 211.35
Prob > chi2 = 0.0000
Log likelihood = -1468.7334 Pseudo R2 = 0.0671

admin	RRR	Std. Err.	z	P>|z|	[95% Conf.	Interval]
1	(base outcome)					
2						
tenure	1.023488	.0100825	2.36	0.018	1.003916	1.043441
exper	1.030288	.0151947	2.02	0.043	1.000933	1.060504
pyperstudlep	.9990854	.0035941	-0.25	0.799	.9920658	1.006155
pyperstude~s	1.004474	.006533	0.69	0.493	.9917503	1.01736
pyperstudw~e	1.005844	.1035565	0.06	0.955	.8220446	1.230739
pyperstudb~k	.6133731	.1549219	-1.94	0.053	.3738812	1.006273
pyperstudl~o	.9859971	.0953814	-0.15	0.884	.8157063	1.191839
pyperstudm~e	.9922899	.0078142	-0.98	0.326	.977092	1.007724
male	2.15929	.6093682	2.73	0.006	1.241925	3.754279
age	.9482526	.0123659	-4.07	0.000	.924323	.9728017
Asian	1.549351	2.225422	0.30	0.761	.0927941	25.86898
Black	1.85e+07	5.05e+10	0.01	0.995	0	.
Latino	1.119781	.248325	0.51	0.610	.7250511	1.729407
Other	6.78e-07	.0007887	-0.01	0.990	0	.
AsianMale	6.82e-08	.0001675	-0.01	0.995	0	.
BlackMale	5.51e-08	.0001509	-0.01	0.995	0	.
LatinoMale	.8840172	.2788466	-0.39	0.696	.4763928	1.640424
OtherMale	1.56e+12	2.71e+15	0.02	0.987	0	.
3						
tenure	1.027419	.0100858	2.76	0.006	1.00784	1.047378
exper	1.079134	.0182163	4.51	0.000	1.044015	1.115435
pyperstudlep	1.014616	.0037192	3.96	0.000	1.007352	1.021931
pyperstude~s	1.016736	.0077729	2.17	0.030	1.001615	1.032085
pyperstudw~e	.9112722	.096719	-0.88	0.381	.7401244	1.121996
pyperstudb~k	.799723	.1320374	-1.35	0.176	.5786326	1.10529
pyperstudl~o	.8865613	.087828	-1.22	0.224	.7301023	1.076549
pyperstudm~e	1.013659	.0064501	2.13	0.033	1.001095	1.02638
male	.6432478	.2374864	-1.20	0.232	.3119719	1.326298
age	.9629175	.0149414	-2.44	0.015	.9340737	.992652
Asian	1.01e-06	.0015304	-0.01	0.993	0	.
Black	3.151721	14248.87	0.00	1.000	0	.
Latino	1.094447	.2507079	0.39	0.694	.6985665	1.714675
Other	.9688649	1.233592	-0.02	0.980	.0798885	11.75011
AsianMale	1.046811	3204.489	0.00	1.000	0	.
BlackMale	2.91e-07	.0013844	-0.00	0.997	0	.
LatinoMale	2.301151	.9174432	2.09	0.037	1.053369	5.027009

```
   OtherMale |    4651504   6.01e+09     0.01   0.991           0           .
-------------------------------------------------------------------------------


---------->  region = 2

Iteration 0:   log likelihood = -833.90795
Iteration 1:   log likelihood = -786.48705
Iteration 2:   log likelihood =  -784.9632
Iteration 3:   log likelihood = -784.76288
Iteration 4:   log likelihood = -784.73044
Iteration 5:   log likelihood = -784.72709
Iteration 6:   log likelihood = -784.72641
Iteration 7:   log likelihood = -784.72626
Iteration 8:   log likelihood = -784.72623
Iteration 9:   log likelihood = -784.72622

Multinomial logistic regression                 Number of obs   =        848
                                                LR chi2(36)     =      98.36
                                                Prob > chi2     =     0.0000
Log likelihood = -784.72622                     Pseudo R2       =     0.0590

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.011987   .0153686     0.78   0.433     .9823091    1.042562
       exper |   .9608382   .0183333    -2.09   0.036     .9255691    .9974512
pyperstudlep |   1.005142   .0166479     0.31   0.757     .9730367    1.038307
pyperstude~s |   1.004864   .0068178     0.72   0.474       .99159    1.018316
pyperstudw~e |   .9380812    .066205    -0.91   0.365     .8168964    1.077243
pyperstudb~k |   .9337054   .0686961    -0.93   0.351      .808321    1.078539
pyperstudl~o |   .9332578    .062625    -1.03   0.303     .8182441    1.064438
pyperstudm~e |   .9911148   .0077119    -1.15   0.251     .9761144    1.006346
        male |   1.309131   .3640675     0.97   0.333     .7590412    2.257881
         age |   .9996248   .0156955    -0.02   0.981     .9693307    1.030866
       Asian |   1.05e+08   5.37e+11     0.00   0.997            0           .
       Black |   4.983348   3.589808     2.23   0.026     1.214365       20.45
      Latino |   1.127212   .3036835     0.44   0.657     .6647864      1.9113
       Other |   4.40e-07   .0008838    -0.01   0.994            0           .
   AsianMale |   4.28e-15   2.50e-11    -0.01   0.995            0           .
   BlackMale |   .7712652   .7808674    -0.26   0.798     .1060241    5.610515
  LatinoMale |   1.514214   .5896989     1.07   0.287     .7058191    3.248487
   OtherMale |    2814563   5.65e+09     0.01   0.994            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9926645   .0116829    -0.63   0.532     .9700285    1.015829
       exper |   1.045616   .0182616     2.55   0.011      1.01043    1.082028
pyperstudlep |   .9977641   .0137862    -0.16   0.871     .9711062    1.025154
pyperstude~s |    1.03522   .0068686     5.22   0.000     1.021845     1.04877
pyperstudw~e |   1.152886   .0836474     1.96   0.050     1.000063    1.329061
pyperstudb~k |   1.099511   .0833304     1.25   0.211     .9477381     1.27559
pyperstudl~o |   1.121216   .0777891     1.65   0.099     .9786638    1.284532
pyperstudm~e |   1.002787   .0071228     0.39   0.695     .9889234    1.016845
        male |   1.263405   .3180438     0.93   0.353     .7713745    2.069285
         age |   .9876146   .0159639    -0.77   0.441     .9568165    1.019404
       Asian |   1.809009   16637.42     0.00   1.000            0           .
       Black |   1.476321   1.089908     0.53   0.598     .3473546    6.274633
      Latino |   .8800311   .2094046    -0.54   0.591     .5520183    1.402951
       Other |   7.35e-07   .0012286    -0.01   0.993            0           .
   AsianMale |   4.02e-07   .0038229    -0.00   0.999            0           .
   BlackMale |   2.300937   2.336153     0.82   0.412     .3145399    16.83193
  LatinoMale |   1.507805   .5346462     1.16   0.247     .7525255    3.021128
   OtherMale |    1.47802   2911.259     0.00   1.000            0           .
------------------------------------------------------------------------------
```

```
---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -336.91318
Iteration 1:   log likelihood = -304.93181
Iteration 2:   log likelihood = -303.77546
Iteration 3:   log likelihood = -303.72512
Iteration 4:   log likelihood = -303.71365
Iteration 5:   log likelihood = -303.71136
Iteration 6:   log likelihood = -303.71098
Iteration 7:   log likelihood = -303.71089
Iteration 8:   log likelihood = -303.71087

Multinomial logistic regression                 Number of obs   =        321
                                                LR chi2(30)     =      66.40
                                                Prob > chi2     =     0.0001
Log likelihood = -303.71087                     Pseudo R2       =     0.0985

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.02127   .0225025     0.96   0.339     .9781043     1.06634
       exper |   .9682882   .0304178    -1.03   0.305     .9104686     1.02978
pyperstudlep |   .9070923   .0587772    -1.50   0.132     .7989063    1.029929
pyperstude~s |   .9802994   .0139489    -1.40   0.162     .9533377    1.008023
pyperstudw~e |    .988079   .0481242    -0.25   0.806     .8981194    1.087049
pyperstudb~k |   1.003612   .0502333     0.07   0.943     .9098315    1.107058
pyperstudl~o |    1.04673   .0532337     0.90   0.369     .9474256    1.156444
pyperstudm~e |   .9813758    .017953    -1.03   0.304     .9468118    1.017201
        male |   1.173793   .4343339     0.43   0.665     .5683618    2.424143
         age |    .985005   .0280491    -0.53   0.596     .9315358    1.041543
       Asian |  (omitted)
       Black |   1.656457   1.308576     0.64   0.523      .352163    7.791419
      Latino |   1.869403   1.308833     0.89   0.372     .4739664     7.37324
       Other |   384152.2   1.69e+08     0.03   0.977            0           .
   AsianMale |  (omitted)
   BlackMale |   .4054857   .7115523    -0.51   0.607     .0130099    12.63795
  LatinoMale |    .702661   .7401092    -0.34   0.738      .089162    5.537478
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9891993   .0173073    -0.62   0.535     .9558526    1.023709
       exper |   1.007737   .0266575     0.29   0.771     .9568206    1.061363
pyperstudlep |   1.050552   .0427655     1.21   0.226       .96999    1.137805
pyperstude~s |   1.027296   .0120667     2.29   0.022     1.003916    1.051221
pyperstudw~e |   1.102124   .0505853     2.12   0.034     1.007307    1.205866
pyperstudb~k |    1.05523   .0496202     1.14   0.253     .9623228    1.157106
pyperstudl~o |   1.090463   .0516347     1.83   0.067     .9938154     1.19651
pyperstudm~e |   1.015792    .013062     1.22   0.223      .990511    1.041719
        male |   2.829486    .908576     3.24   0.001      1.50792    5.309294
         age |   .9995256   .0249156    -0.02   0.985     .9518656    1.049572
       Asian |  (omitted)
       Black |   1.631649   1.216581     0.66   0.511     .3784065      7.0355
      Latino |   1.928669   1.279051     0.99   0.322      .525726    7.075477
       Other |   451672.8   1.99e+08     0.03   0.976            0           .
   AsianMale |  (omitted)
   BlackMale |   .5548062    .840374    -0.39   0.697     .0284979    10.80115
  LatinoMale |    .916829   .8580432    -0.09   0.926     .1464417    5.740002
   OtherMale |  (omitted)
------------------------------------------------------------------------------
```

```
---------->  region = 4

Iteration 0:   log likelihood = -4667.8416
Iteration 1:   log likelihood =  -4427.345
Iteration 2:   log likelihood = -4419.8768
Iteration 3:   log likelihood = -4419.8412
Iteration 4:   log likelihood = -4419.8411

Multinomial logistic regression                 Number of obs   =       4480
                                                LR chi2(36)     =     496.00
                                                Prob > chi2     =     0.0000
Log likelihood = -4419.8411                     Pseudo R2       =     0.0531

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.015787   .0055254     2.88   0.004     1.005015    1.026674
       exper |   1.020233   .0077407     2.64   0.008     1.005173    1.035517
pyperstudlep |   1.001531   .0039139     0.39   0.695     .9938894    1.009232
pyperstude~s |    .995937   .0033631    -1.21   0.228     .9893673     1.00255
pyperstudw~e |   .9915925   .0066838    -1.25   0.210     .9785787    1.004779
pyperstudb~k |   .9893541   .0078805    -1.34   0.179     .9740284    1.004921
pyperstudl~o |   .9933673   .0076835    -0.86   0.390     .9784215    1.008541
pyperstudm~e |   .9999435   .0034562    -0.02   0.987     .9931923    1.006741
        male |    1.11593   .1032909     1.19   0.236     .9307852    1.337903
         age |   .9535549   .0061036    -7.43   0.000     .9416667    .9655932
       Asian |   .4608473   .2684883    -1.33   0.184     .1471124    1.443659
       Black |   .9674584   .1103564    -0.29   0.772     .7736369    1.209839
      Latino |   1.261843   .1937464     1.51   0.130     .9339199    1.704907
       Other |   .2318582   .1774112    -1.91   0.056     .0517497    1.038813
   AsianMale |   1.423558   1.286493     0.39   0.696     .2421757     8.36797
   BlackMale |    1.56712   .2729373     2.58   0.010     1.113917    2.204711
  LatinoMale |   1.679796   .4381572     1.99   0.047     1.007464    2.800809
   OtherMale |   2.728872   3.116869     0.88   0.379     .2909083    25.59826
-------------+----------------------------------------------------------------
3            |
      tenure |   1.033208   .0063062     5.35   0.000     1.020921    1.045642
       exper |   1.068791   .0102611     6.93   0.000     1.048868    1.089093
pyperstudlep |    1.01856   .0046327     4.04   0.000      1.00952     1.02768
pyperstude~s |   1.025025   .0041729     6.07   0.000     1.016879    1.033237
pyperstudw~e |   .9987706   .0084109    -0.15   0.884     .9824207    1.015392
pyperstudb~k |   .9783602   .0098212    -2.18   0.029     .9592992        .9978
pyperstudl~o |   .9670824   .0092979    -3.48   0.000     .9490296    .9854787
pyperstudm~e |   1.004453    .004016     1.11   0.266     .9966128    1.012355
        male |     1.1527   .1247231     1.31   0.189     .9324282    1.425006
         age |   .9642995   .0080418    -4.36   0.000     .9486659    .9801906
       Asian |   .1575632    .169301    -1.72   0.085     .0191797    1.294397
       Black |   .5346666    .077715    -4.31   0.000     .4021231    .7108977
      Latino |   1.172552   .2068495     0.90   0.367     .8297971    1.656885
       Other |   .5806171   .3853478    -0.82   0.413     .1581098    2.132166
   AsianMale |   1.399553   2.133245     0.22   0.825     .0705601    27.75997
   BlackMale |   1.380481   .3051479     1.46   0.145     .8951111    2.129041
  LatinoMale |   1.402285   .4429409     1.07   0.284     .7550345     2.60439
   OtherMale |   2.621197   2.830077     0.89   0.372     .3158399    21.75367
------------------------------------------------------------------------------


---------->  region = 5

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -570.93565
Iteration 1:   log likelihood =  -496.8993
```

```
Iteration 2:   log likelihood = -493.47733
Iteration 3:   log likelihood = -493.26982
Iteration 4:   log likelihood = -493.23023
Iteration 5:   log likelihood = -493.22178
Iteration 6:   log likelihood = -493.21985
Iteration 7:   log likelihood = -493.21938
Iteration 8:   log likelihood = -493.21929
Iteration 9:   log likelihood = -493.21927

Multinomial logistic regression                 Number of obs   =        579
                                                LR chi2(34)     =     155.43
                                                Prob > chi2     =     0.0000
Log likelihood = -493.21927                     Pseudo R2       =     0.1361

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.035747   .0190931     1.91   0.057     .9989933    1.073853
       exper |   .9849576   .0258898    -0.58   0.564     .9354995    1.037031
pyperstudlep |   .9394501   .0336517    -1.74   0.081     .8757561    1.007777
pyperstude~s |    1.01227   .0086617     1.43   0.154     .9954352     1.02939
pyperstudw~e |    1.00491    .046098     0.11   0.915     .9185021    1.099446
pyperstudb~k |   .9904236   .0463447    -0.21   0.837     .9036306    1.085553
pyperstudl~o |   1.059231   .0659136     0.92   0.355     .9376099    1.196627
pyperstudm~e |   1.017552   .0117884     1.50   0.133     .9947075    1.040921
        male |   3.563892   1.027999     4.41   0.000     2.024869    6.272667
         age |    .953944   .0201267    -2.23   0.025     .9153009    .9942187
       Asian |   1.69e-06   .0030397    -0.01   0.994            0           .
       Black |   2.564351   1.015634     2.38   0.017     1.179917    5.573185
      Latino |    3164606   2.88e+09     0.02   0.987            0           .
       Other |   1.04e-06   .0018717    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   .5984531   .3048636    -1.01   0.314     .2205015    1.624234
  LatinoMale |   7.56e-07   .0006884    -0.02   0.988            0           .
   OtherMale |   1.07e+13   3.52e+16     0.01   0.993            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.002033   .0151009     0.13   0.893      .972869    1.032072
       exper |   1.095197   .0290156     3.43   0.001     1.039778    1.153568
pyperstudlep |   .9930443   .0369656    -0.19   0.851     .9231728    1.068204
pyperstude~s |   1.041077   .0090909     4.61   0.000     1.023411    1.059048
pyperstudw~e |   .9722404   .0416402    -0.66   0.511     .8939586    1.057377
pyperstudb~k |   .9389722   .0409702    -1.44   0.149     .8620098    1.022806
pyperstudl~o |   .9439343   .0542673    -1.00   0.316     .8433458     1.05652
pyperstudm~e |   1.033074    .011388     2.95   0.003     1.010993    1.055637
        male |    4.63409   1.276004     5.57   0.000     2.701374    7.949578
         age |   .9584645   .0230278    -1.77   0.077      .914377    1.004678
       Asian |   2.13e-06    .003693    -0.01   0.994            0           .
       Black |   2.065119   .9077581     1.65   0.099     .8725395    4.887707
      Latino |    8186705   7.45e+09     0.02   0.986            0           .
       Other |   6.77e-06   .0117123    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |    .619684   .3471985    -0.85   0.393       .20666    1.858165
  LatinoMale |   6.96e-14   8.46e-11    -0.02   0.980            0           .
   OtherMale |   147449.5   8.03e+08     0.00   0.998            0           .
------------------------------------------------------------------------------


---------->  region = 6

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -769.3428
Iteration 1:   log likelihood = -709.12091
Iteration 2:   log likelihood = -708.11993
```

```
Iteration 3:   log likelihood = -708.06557
Iteration 4:   log likelihood =  -708.0564
Iteration 5:   log likelihood = -708.05432
Iteration 6:   log likelihood = -708.05382
Iteration 7:   log likelihood = -708.05372
Iteration 8:   log likelihood = -708.05369

Multinomial logistic regression                 Number of obs   =        711
                                                LR chi2(34)     =     122.58
                                                Prob > chi2     =     0.0000
Log likelihood = -708.05369                     Pseudo R2       =     0.0797

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9592494    .013835    -2.88   0.004      .932513    .9867523
       exper |   .9913832   .0170598    -0.50   0.615     .9585041     1.02539
pyperstudlep |   1.055822   .0197575     2.90   0.004       1.0178    1.095265
pyperstude~s |   .9989417   .0076854    -0.14   0.891     .9839916    1.014119
pyperstudw~e |   .9572061   .0476469    -0.88   0.380     .8682308    1.055299
pyperstudb~k |   .9678914   .0499999    -0.63   0.528     .8746912    1.071022
pyperstudl~o |   .9409584   .0467373    -1.23   0.220     .8536725    1.037169
pyperstudm~e |   1.002064   .0089496     0.23   0.817     .9846755    1.019759
        male |   1.247554   .2560853     1.08   0.281     .8343211    1.865458
         age |   .9792097   .0148446    -1.39   0.166     .9505429    1.008741
       Asian |   5.40e-06   .0044918    -0.01   0.988            0           .
       Black |   1.816101   1.014218     1.07   0.285     .6078248     5.42627
      Latino |   .3372462   .2949049    -1.24   0.214     .0607595    1.871889
       Other |   1.624485   2.502141     0.32   0.753     .0793666    33.25015
   AsianMale |  (omitted)
   BlackMale |   1.360762   1.088275     0.39   0.700      .283812    6.524299
  LatinoMale |   25.71782   36.04322     2.32   0.021     1.649246    401.0356
   OtherMale |   1.48e-06   .0012289    -0.02   0.987            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9627982   .0127023    -2.87   0.004     .9382212    .9880189
       exper |   1.085766   .0221187     4.04   0.000     1.043268    1.129995
pyperstudlep |   1.032768   .0196238     1.70   0.090     .9950131    1.071955
pyperstude~s |   1.030538   .0077901     3.98   0.000     1.015383     1.04592
pyperstudw~e |   .9700115    .048562    -0.61   0.543     .8793523    1.070017
pyperstudb~k |   .9640894   .0496442    -0.71   0.478     .8715375     1.06647
pyperstudl~o |   .9442364   .0471441    -1.15   0.250     .8562127    1.041309
pyperstudm~e |   1.009205   .0084178     1.10   0.272       .99284    1.025839
        male |   1.784462   .3695297     2.80   0.005     1.189156    2.677785
         age |   .9516836   .0177883    -2.65   0.008     .9174501    .9871945
       Asian |   3.52e-06   .0029681    -0.01   0.988            0           .
       Black |   2.147991   1.220848     1.35   0.179      .705078    6.543765
      Latino |   .5222456   .4536267    -0.75   0.455     .0951731    2.865729
       Other |   1.159718   1.833534     0.09   0.925     .0523104    25.71087
   AsianMale |  (omitted)
   BlackMale |   .4471096   .3803837    -0.95   0.344      .084381    2.369101
  LatinoMale |   9.876086   14.39639     1.57   0.116     .5672656    171.9425
   OtherMale |   1.12e-06   .0009437    -0.02   0.987            0           .
------------------------------------------------------------------------------


---------->  region = 7

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1013.0522
Iteration 1:   log likelihood = -952.41468
Iteration 2:   log likelihood = -950.05734
Iteration 3:   log likelihood = -949.89257
Iteration 4:   log likelihood = -949.86076
```

```
Iteration 5:   log likelihood = -949.85396
Iteration 6:   log likelihood = -949.85239
Iteration 7:   log likelihood = -949.85202
Iteration 8:   log likelihood = -949.85194
Iteration 9:   log likelihood = -949.85193

Multinomial logistic regression                 Number of obs   =       1006
                                                LR chi2(34)     =     126.40
                                                Prob > chi2     =     0.0000
Log likelihood = -949.85193                     Pseudo R2       =     0.0624

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.002986   .0132394     0.23   0.821     .9773704    1.029274
       exper |    .995901   .0175231    -0.23   0.815     .9621419    1.030845
pyperstudlep |   1.006757   .0221476     0.31   0.759     .9642715    1.051115
pyperstude~s |   .9935448   .0076473    -0.84   0.400     .9786689    1.008647
pyperstudw~e |   .8319614   .0829198    -1.85   0.065     .6843302    1.011441
pyperstudb~k |   .8368125   .0845892    -1.76   0.078     .6864114    1.020168
pyperstudl~o |   .8357957   .0844817    -1.77   0.076     .6855848    1.018918
pyperstudm~e |   .9789413   .0121372    -1.72   0.086     .9554396    1.003021
        male |   1.959335   .4168825     3.16   0.002     1.291222    2.973149
         age |    .966271   .0154443    -2.15   0.032       .93647    .9970205
       Asian |   6.88e-07   .0012563    -0.01   0.994            0           .
       Black |   2.726635   .9242021     2.96   0.003     1.403167    5.298398
      Latino |   .4312152   .4800978    -0.76   0.450     .0486407    3.822857
       Other |   9.27e-07   .0011474    -0.01   0.991            0           .
   AsianMale |  (omitted)
   BlackMale |    1.06512   .5096754     0.13   0.895     .4169523    2.720889
  LatinoMale |   1.531478   2.125252     0.31   0.759     .1008992    23.24525
   OtherMale |   .7616127   1323.623    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9803089   .0096853    -2.01   0.044     .9615087    .9994767
       exper |   1.036938   .0146051     2.58   0.010     1.008704    1.065962
pyperstudlep |   1.008662   .0182238     0.48   0.633      .973569     1.04502
pyperstude~s |   1.030698   .0060774     5.13   0.000     1.018855    1.042679
pyperstudw~e |   .8278154   .0738847    -2.12   0.034     .6949627    .9860649
pyperstudb~k |   .8084624   .0731232    -2.35   0.019     .6771283    .9652697
pyperstudl~o |   .8092009   .0730747    -2.34   0.019     .6779362    .9658815
pyperstudm~e |   1.013646   .0066774     2.06   0.040     1.000643    1.026818
        male |   1.676492   .2787148     3.11   0.002     1.210293     2.32227
         age |   .9870027   .0129219    -1.00   0.318     .9619985    1.012657
       Asian |    1.80252   2.657486     0.40   0.689     .1002164    32.42062
       Black |   1.513949   .4794361     1.31   0.190     .8138667    2.816236
      Latino |   .2742771   .2987966    -1.19   0.235      .032426    2.319989
       Other |   .8045956   .9453392    -0.19   0.853     .0804415    8.047766
   AsianMale |  (omitted)
   BlackMale |   1.127382   .5271245     0.26   0.798     .4508984    2.818793
  LatinoMale |   4.751992   6.090403     1.22   0.224      .385417     58.5896
   OtherMale |    1.68847   2.653133     0.33   0.739     .0776211    36.72881
------------------------------------------------------------------------------


---------->  region = 8

note: AsianMale omitted because of collinearity
note: LatinoMale omitted because of collinearity
Iteration 0:   log likelihood = -339.81399
Iteration 1:   log likelihood = -304.47623
Iteration 2:   log likelihood = -302.40627
Iteration 3:   log likelihood = -302.21687
Iteration 4:   log likelihood = -302.17674
```

```
Iteration 5:   log likelihood = -302.16775
Iteration 6:   log likelihood =  -302.1656
Iteration 7:   log likelihood = -302.16514
Iteration 8:   log likelihood = -302.16504
Iteration 9:   log likelihood = -302.16502

Multinomial logistic regression                 Number of obs   =        337
                                                LR chi2(32)     =      75.30
                                                Prob > chi2     =     0.0000
Log likelihood = -302.16502                     Pseudo R2       =     0.1108

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9831057   .0239139    -0.70   0.484      .937335    1.031111
       exper |   1.030464   .0319304     0.97   0.333     .9697443    1.094986
pyperstudlep |   1.066613   .0657452     1.05   0.295      .945234    1.203578
pyperstude~s |   .9767726   .0160717    -1.43   0.153     .9457752    1.008786
pyperstudw~e |   .7671826   .1949819    -1.04   0.297     .4661902    1.262509
pyperstudb~k |   .8077241   .2020946    -0.85   0.393     .4946412    1.318973
pyperstudl~o |   .7392726    .186575    -1.20   0.231     .4507974     1.21235
pyperstudm~e |   .9575594   .0315914    -1.31   0.189     .8976008    1.021523
        male |   1.496195   .5709565     1.06   0.291     .7082146    3.160906
         age |   .9817791   .0282313    -0.64   0.522     .9279771      1.0387
       Asian |   5.11e+07   2.07e+11     0.00   0.996            0           .
       Black |   1.643719   1.306586     0.63   0.532     .3461071    7.806288
      Latino |   1.113687   1.480266     0.08   0.935     .0822966    15.07109
       Other |   1.27e-06   .0010721    -0.02   0.987            0           .
   AsianMale |  (omitted)
   BlackMale |   1.526528   1.647963     0.39   0.695     .1839885     12.6654
  LatinoMale |  (omitted)
   OtherMale |   8.66e+11   1.02e+15     0.02   0.981            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9998667   .0180679    -0.01   0.994     .9650741    1.035914
       exper |   1.060122   .0276966     2.23   0.025     1.007204     1.11582
pyperstudlep |   1.057461   .0426581     1.39   0.166      .977073    1.144464
pyperstude~s |   1.034302    .011412     3.06   0.002     1.012175    1.056913
pyperstudw~e |   1.184993   .2162887     0.93   0.352     .8286129    1.694649
pyperstudb~k |   1.140619   .2054597     0.73   0.465     .8013338    1.623557
pyperstudl~o |   1.098776   .2012603     0.51   0.607     .7673556    1.573338
pyperstudm~e |   1.007371   .0134818     0.55   0.583     .9812908    1.034145
        male |   2.119846   .6003027     2.65   0.008     1.216912    3.692747
         age |   .9809577   .0239053    -0.79   0.430     .9352056    1.028948
       Asian |   .7629208   4693.692    -0.00   1.000            0           .
       Black |   2.528545    1.55559     1.51   0.132     .7571844    8.443834
      Latino |   1.182312   1.195422     0.17   0.868     .1629644    8.577716
       Other |   2.83e-06    .001612    -0.02   0.982            0           .
   AsianMale |  (omitted)
   BlackMale |   .5152623   .5022497    -0.68   0.496     .0762647    3.481236
  LatinoMale |  (omitted)
   OtherMale |   2.13e+11   2.12e+14     0.03   0.979            0           .
------------------------------------------------------------------------------


---------->  region = 9

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -220.98733
Iteration 1:   log likelihood = -193.46518
Iteration 2:   log likelihood = -191.37818
Iteration 3:   log likelihood = -191.03453
```

```
Iteration 4:   log likelihood = -190.96668
Iteration 5:   log likelihood = -190.94951
Iteration 6:   log likelihood = -190.94614
Iteration 7:   log likelihood = -190.94563
Iteration 8:   log likelihood = -190.94557
Iteration 9:   log likelihood = -190.94556

Multinomial logistic regression                 Number of obs   =        209
                                                LR chi2(30)     =      60.08
                                                Prob > chi2     =     0.0009
Log likelihood = -190.94556                     Pseudo R2       =     0.1359

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |   1.000994   .0217372     0.05   0.964     .9592835    1.044517
       exper |   1.021906   .0388248     0.57   0.568     .9485747    1.100906
pyperstudlep |   1.065684   .0610401     1.11   0.267     .9525185    1.192294
pyperstude~s |   .9503489   .0143102    -3.38   0.001     .9227112    .9788143
pyperstudw~e |    .887498   .1165541    -0.91   0.363     .6860884    1.148034
pyperstudb~k |   .9001962   .1330886    -0.71   0.477     .6737396    1.202769
pyperstudl~o |   .9178581   .1187574    -0.66   0.508     .7122665    1.182792
pyperstudm~e |   .9857519   .0189719    -0.75   0.456     .9492604    1.023646
        male |   .5334651   .1886309    -1.78   0.076     .2667626     1.06681
         age |   .9784408   .0328694    -0.65   0.516      .916093    1.045032
       Asian |  (omitted)
       Black |   .2595343   .3521123    -0.99   0.320     .0181703    3.707037
      Latino |   965088.9   1.39e+09     0.01   0.992            0           .
       Other |   4.34e-07   .0008028    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |    7344552   6.20e+09     0.02   0.985            0           .
  LatinoMale |   4.45e-13   9.77e-10    -0.01   0.990            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.033173   .0349898     0.96   0.335     .9668212    1.104079
       exper |   .9024222   .0420719    -2.20   0.028      .823618    .9887664
pyperstudlep |   1.110988   .0815819     1.43   0.152     .9620642    1.282965
pyperstude~s |   .9486948   .0193351    -2.58   0.010     .9115457    .9873579
pyperstudw~e |   .8268603   .1261518    -1.25   0.213     .6131499    1.115059
pyperstudb~k |   .8733181   .1480339    -0.80   0.424     .6264515    1.217468
pyperstudl~o |   .8315379   .1267838    -1.21   0.226     .6167372    1.121151
pyperstudm~e |   1.013907   .0205459     0.68   0.496     .9744275    1.054987
        male |   .9727765   .4512665    -0.06   0.953     .3918724    2.414802
         age |   1.011987    .036058     0.33   0.738     .9437258    1.085185
       Asian |  (omitted)
       Black |   1.465647   1.620081     0.35   0.729     .1679337    12.79149
      Latino |    1255378   1.81e+09     0.01   0.992            0           .
       Other |   3.955612   5.684369     0.96   0.339      .236594    66.13381
   AsianMale |  (omitted)
   BlackMale |   622578.6   5.25e+08     0.02   0.987            0           .
  LatinoMale |   3.83e-13   1.04e-09    -0.01   0.992            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |  (base outcome)
------------------------------------------------------------------------------


---------->  region = 10

Iteration 0:   log likelihood =  -3218.098
Iteration 1:   log likelihood = -3044.4752
Iteration 2:   log likelihood = -3042.3541
Iteration 3:   log likelihood = -3042.3511
Iteration 4:   log likelihood = -3042.3511
```

```
Multinomial logistic regression                 Number of obs   =       2998
                                                LR chi2(36)     =     351.49
                                                Prob > chi2     =     0.0000
Log likelihood = -3042.3511                     Pseudo R2       =     0.0546

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.016467   .0069489     2.39   0.017     1.002938    1.030178
       exper |   .9852188   .0091739    -1.60   0.110     .9674014    1.003364
pyperstudlep |   1.000954   .0055988     0.17   0.865     .9900401    1.011987
pyperstude~s |   .9901731   .0035368    -2.76   0.006     .9832652    .9971295
pyperstudw~e |    .985211   .0093259    -1.57   0.115     .9671011     1.00366
pyperstudb~k |   .9909935   .0097288    -0.92   0.357     .9721077    1.010246
pyperstudl~o |   .9927181   .0095552    -0.76   0.448     .9741658    1.011624
pyperstudm~e |   .9980477   .0048201    -0.40   0.686      .988645     1.00754
        male |   1.410692   .1580124     3.07   0.002     1.132631    1.757016
         age |   .9677835   .0076344    -4.15   0.000     .9529355    .9828628
       Asian |   .8524511   .6221997    -0.22   0.827     .2038834     3.56416
       Black |   1.548927   .2490868     2.72   0.007     1.130179    2.122828
      Latino |   2.614627   .5831117     4.31   0.000     1.688789    4.048031
       Other |   .7140717   .4197304    -0.57   0.567     .2256351    2.259836
   AsianMale |   1.870162   1.844786     0.63   0.526     .2705375    12.92799
   BlackMale |   1.730054   .4249049     2.23   0.026     1.069062    2.799733
  LatinoMale |   .8721867   .2980691    -0.40   0.689     .4463875    1.704146
   OtherMale |   1.055083   .8206907     0.07   0.945     .2297119    4.846066
-------------+----------------------------------------------------------------
3            |
      tenure |   1.025446   .0065099     3.96   0.000     1.012766    1.038285
       exper |    1.04074   .0103783     4.00   0.000     1.020596    1.061281
pyperstudlep |   1.017565   .0063194     2.80   0.005     1.005254    1.030026
pyperstude~s |   1.007315   .0035857     2.05   0.041     1.000311    1.014367
pyperstudw~e |   1.021306   .0102258     2.11   0.035     1.001459    1.041546
pyperstudb~k |   1.003011   .0105925     0.28   0.776     .9824634    1.023988
pyperstudl~o |   .9904894   .0101918    -0.93   0.353      .970714    1.010668
pyperstudm~e |   1.010858   .0046857     2.33   0.020     1.001716    1.020083
        male |   1.206042   .1360975     1.66   0.097     .9667345    1.504587
         age |   .9775841   .0087109    -2.54   0.011     .9606591    .9948072
       Asian |   .8127482   .6037372    -0.28   0.780     .1895197     3.48544
       Black |    1.47786   .2572572     2.24   0.025     1.050658    2.078766
      Latino |   2.601955   .6081815     4.09   0.000     1.645659    4.113957
       Other |   .3378231   .2631703    -1.39   0.164     .0733818    1.555216
   AsianMale |   1.977114   2.028312     0.66   0.506     .2647207    14.76643
   BlackMale |   1.462103   .3998428     1.39   0.165     .8554585    2.498946
  LatinoMale |   1.327486   .4789514     0.79   0.432     .6545152    2.692402
   OtherMale |   1.485554   1.512756     0.39   0.698     .2018834    10.93142
------------------------------------------------------------------------------


---------->  region = 11

Iteration 0:   log likelihood = -2299.5528
Iteration 1:   log likelihood = -2152.3809
Iteration 2:   log likelihood = -2149.8626
Iteration 3:   log likelihood = -2149.7495
Iteration 4:   log likelihood = -2149.7344
Iteration 5:   log likelihood = -2149.7325
Iteration 6:   log likelihood = -2149.7322
Iteration 7:   log likelihood = -2149.7321
Iteration 8:   log likelihood = -2149.7321

Multinomial logistic regression                 Number of obs   =       2112
                                                LR chi2(36)     =     299.64
                                                Prob > chi2     =     0.0000
```

```
Log likelihood = -2149.7321                     Pseudo R2       =     0.0652

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.003514   .0080841     0.44   0.663     .9877935    1.019484
       exper |   .9953014   .0099964    -0.47   0.639     .9759003    1.015088
pyperstudlep |   .9888107   .0078549    -1.42   0.157     .9735346    1.004326
pyperstude~s |   .9962936   .0039709    -0.93   0.352      .988541    1.004107
pyperstudw~e |   .9845133   .0145428    -1.06   0.291     .9564186    1.013433
pyperstudb~k |    .988565     .01529    -0.74   0.457     .9590468    1.018992
pyperstudl~o |   .9977121   .0150226    -0.15   0.879     .9686985    1.027595
pyperstudm~e |    .989335   .0043524    -2.44   0.015     .9808411    .9979024
        male |   1.046136    .125773     0.38   0.708     .8265162    1.324113
         age |   .9697608   .0085338    -3.49   0.000     .9531783    .9866319
       Asian |   1.060571    .820199     0.08   0.939     .2329474    4.828604
       Black |      2.156   .5254969     3.15   0.002     1.337148    3.476306
      Latino |    2.89278   .9278709     3.31   0.001     1.542727    5.424275
       Other |   1.076982   .6650058     0.12   0.904     .3210814    3.612445
   AsianMale |   .9911519   1.260614    -0.01   0.994     .0819455    11.98824
   BlackMale |   2.133478   .8542911     1.89   0.058     .9733042    4.676574
  LatinoMale |   .7546765   .3603227    -0.59   0.556      .296041    1.923844
   OtherMale |   2.162942    2.41645     0.69   0.490     .2421466     19.3202
-------------+----------------------------------------------------------------
3            |
      tenure |   1.006951   .0076024     0.92   0.359       .99216    1.021962
       exper |   1.067085   .0117641     5.89   0.000     1.044275    1.090394
pyperstudlep |   1.004308   .0080807     0.53   0.593     .9885942    1.020271
pyperstude~s |   1.025009   .0041562     6.09   0.000     1.016896    1.033188
pyperstudw~e |   1.039534   .0173432     2.32   0.020     1.006091    1.074088
pyperstudb~k |   1.018487   .0179093     1.04   0.298     .9839834      1.0542
pyperstudl~o |   1.013996   .0174216     0.81   0.419     .9804185    1.048723
pyperstudm~e |   1.001214    .004046     0.30   0.764     .9933152    1.009175
        male |   1.208504   .1497281     1.53   0.126      .947956    1.540665
         age |   .9768267   .0098749    -2.32   0.020     .9576626    .9963742
       Asian |   .5045433   .5686115    -0.61   0.544     .0554127    4.593965
       Black |    1.52234    .442931     1.44   0.149     .8606988    2.692602
      Latino |   2.817875   .9559118     3.05   0.002      1.44933    5.478682
       Other |   .5963186   .4968377    -0.62   0.535     .1164873    3.052657
   AsianMale |   .0000108   .0060308    -0.02   0.984            0           .
   BlackMale |   1.890253   .8811625     1.37   0.172     .7580935    4.713213
  LatinoMale |   .5087433   .2788192    -1.23   0.218     .1737776    1.489374
   OtherMale |   5.156694   6.461226     1.31   0.190     .4424194    60.10472
------------------------------------------------------------------------------


---------> region = 12

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -838.86662
Iteration 1:   log likelihood = -777.89605
Iteration 2:   log likelihood = -775.70764
Iteration 3:   log likelihood = -775.54051
Iteration 4:   log likelihood = -775.50372
Iteration 5:   log likelihood =  -775.4962
Iteration 6:   log likelihood = -775.49499
Iteration 7:   log likelihood = -775.49469
Iteration 8:   log likelihood = -775.49463
Iteration 9:   log likelihood = -775.49462

Multinomial logistic regression                 Number of obs   =        788
                                                LR chi2(32)     =     126.74
                                                Prob > chi2     =     0.0000
```

```
Log likelihood = -775.49462                     Pseudo R2       =     0.0755

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.002086   .0136498     0.15   0.878     .9756868    1.029199
       exper |   .9775908   .0176514    -1.26   0.209     .9435996    1.012806
pyperstudlep |    1.04704   .0249877     1.93   0.054     .9991932    1.097179
pyperstude~s |   .9898814   .0070525    -1.43   0.153     .9761549    1.003801
pyperstudw~e |   .8864232   .0475481    -2.25   0.025     .7979622    .9846909
pyperstudb~k |   .9073811   .0520749    -1.69   0.090     .8108472    1.015408
pyperstudl~o |   .8922187   .0484798    -2.10   0.036     .8020847    .9924816
pyperstudm~e |   .9938118   .0078938    -0.78   0.435     .9784602    1.009404
        male |   1.140835   .2506693     0.60   0.549     .7416401    1.754901
         age |   .9661091   .0155944    -2.14   0.033      .936023    .9971622
       Asian |  (omitted)
       Black |   .8231653   .2949363    -0.54   0.587     .4078548    1.661379
      Latino |   1.838054   1.156445     0.97   0.333     .5355617    6.308225
       Other |   3.41e-07   .0003562    -0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |    2.02144   1.239933     1.15   0.251     .6074935    6.726358
  LatinoMale |   1.646068   1.553117     0.53   0.597     .2590073    10.46125
   OtherMale |    1.76788   2970.986     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.013111   .0110361     1.20   0.232     .9917095    1.034974
       exper |   1.035038   .0172298     2.07   0.039     1.001813    1.069365
pyperstudlep |   1.057896   .0229136     2.60   0.009     1.013926    1.103773
pyperstude~s |   1.011552   .0062388     1.86   0.063     .9993974    1.023854
pyperstudw~e |   .9999737   .0548549    -0.00   1.000     .8980381     1.11348
pyperstudb~k |   .9879766   .0574504    -0.21   0.835     .8815554    1.107245
pyperstudl~o |   .9720559    .053788    -0.51   0.609      .872149    1.083407
pyperstudm~e |   1.007253   .0067676     1.08   0.282     .9940759    1.020605
        male |   1.358045    .255241     1.63   0.103     .9395786    1.962887
         age |   .9767109   .0148533    -1.55   0.121     .9480285    1.006261
       Asian |  (omitted)
       Black |   .8030415   .2957905    -0.60   0.552     .3901291     1.65298
      Latino |   .8073375   .6236338    -0.28   0.782      .177639    3.669205
       Other |   6.90e-07   .0006594    -0.01   0.988            0           .
   AsianMale |  (omitted)
   BlackMale |   1.732019   1.053941     0.90   0.367     .5255249    5.708371
  LatinoMale |   1.337187   1.612281     0.24   0.810     .1258567    14.20718
   OtherMale |   .7482322   1127.163    -0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 13

Iteration 0:   log likelihood = -1374.1326
Iteration 1:   log likelihood =  -1291.899
Iteration 2:   log likelihood = -1290.0895
Iteration 3:   log likelihood = -1289.8589
Iteration 4:   log likelihood = -1289.8063
Iteration 5:   log likelihood = -1289.7958
Iteration 6:   log likelihood = -1289.7941
Iteration 7:   log likelihood = -1289.7937
Iteration 8:   log likelihood = -1289.7936
Iteration 9:   log likelihood = -1289.7935

Multinomial logistic regression                 Number of obs   =       1258
                                                LR chi2(36)     =     168.68
                                                Prob > chi2     =     0.0000
Log likelihood = -1289.7935                     Pseudo R2       =     0.0614
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.026672    .011443     2.36   0.018     1.004487    1.049346
       exper |   .9518725    .012361    -3.80   0.000      .927951    .9764107
pyperstudlep |   .9992728   .0112176    -0.06   0.948     .9775267    1.021503
pyperstude~s |   .9851096   .0071634    -2.06   0.039     .9711692       .99925
pyperstudw~e |   .9838681   .0240724    -0.66   0.506     .9378006    1.032199
pyperstudb~k |   1.000637   .0275113     0.02   0.982     .9481432    1.056038
pyperstudl~o |   .9994484    .024625    -0.02   0.982     .9523311    1.048897
pyperstudm~e |   .9903055   .0060668    -1.59   0.112     .9784858    1.002268
        male |   .7871632   .1340598    -1.41   0.160     .5637659    1.099084
         age |   .9873338   .0116661    -1.08   0.281     .9647315    1.010466
       Asian |   .6014127   .7500563    -0.41   0.683     .0521904    6.930345
       Black |   1.920773    .643344     1.95   0.051     .9962645    3.703204
      Latino |   1.922135   .5015123     2.50   0.012     1.152639    3.205343
       Other |   4.079122   4.970755     1.15   0.249     .3743739    44.44549
   AsianMale |   2.71e+07   1.11e+11     0.00   0.997            0           .
   BlackMale |   2.076445   1.185079     1.28   0.200     .6784508    6.355101
  LatinoMale |   2.358145   .9973417     2.03   0.043     1.029361    5.402233
   OtherMale |   .3446166   .5107409    -0.72   0.472     .0188716    6.293095
-------------+----------------------------------------------------------------
3            |
      tenure |   1.009994   .0104092     0.96   0.335      .989797    1.030603
       exper |   1.014311   .0134787     1.07   0.285     .9882347    1.041076
pyperstudlep |   .9899915   .0109694    -0.91   0.364     .9687236    1.011726
pyperstude~s |   1.025177   .0070461     3.62   0.000     1.011459     1.03908
pyperstudw~e |   .9794749   .0249702    -0.81   0.416     .9317369    1.029659
pyperstudb~k |   .9605449   .0276594    -1.40   0.162     .9078349    1.016315
pyperstudl~o |   .9703164   .0251066    -1.16   0.244     .9223353    1.020793
pyperstudm~e |   .9956455   .0058099    -0.75   0.455     .9843232    1.007098
        male |   1.138143   .1815498     0.81   0.417     .8325651    1.555877
         age |   .9851425   .0124446    -1.18   0.236      .961051    1.009838
       Asian |   1.157422    1.43941     0.12   0.906     .1011367     13.2457
       Black |     .77019   .3203868    -0.63   0.530     .3408094    1.740541
      Latino |   .9853375   .2883596    -0.05   0.960     .5552395    1.748597
       Other |   6.06e-07   .0009011    -0.01   0.992            0           .
   AsianMale |   1.322026   8274.767     0.00   1.000            0           .
   BlackMale |    2.74761   1.782102     1.56   0.119     .7706643    9.795913
  LatinoMale |   2.102352    .963106     1.62   0.105      .856569    5.159984
   OtherMale |   .8483886   1587.648    -0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -282.75147
Iteration 1:   log likelihood = -249.10448
Iteration 2:   log likelihood = -245.72455
Iteration 3:   log likelihood = -244.67042
Iteration 4:   log likelihood = -244.56038
Iteration 5:   log likelihood = -244.54056
Iteration 6:   log likelihood = -244.53731
Iteration 7:   log likelihood = -244.53653
Iteration 8:   log likelihood = -244.53636
Iteration 9:   log likelihood = -244.53632
Iteration 10:  log likelihood = -244.53632

Multinomial logistic regression                 Number of obs   =        298
                                                LR chi2(30)     =      76.43
                                                Prob > chi2     =     0.0000
```

```
Log likelihood = -244.53632                     Pseudo R2       =     0.1352

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.014839   .0332925     0.45   0.653     .9516404    1.082235
       exper |   .9559811   .0407086    -1.06   0.290     .8794326    1.039193
pyperstudlep |   .9485245   .1121891    -0.45   0.655     .7522644    1.195987
pyperstude~s |   .9802241   .0201874    -0.97   0.332     .9414454      1.0206
pyperstudw~e |   .8974237   .2494892    -0.39   0.697     .5204252    1.547522
pyperstudb~k |   .9256226    .273646    -0.26   0.794     .5185485     1.65226
pyperstudl~o |   .9073812   .2485292    -0.35   0.723     .5304544    1.552142
pyperstudm~e |    1.01722   .0267611     0.65   0.516     .9660985    1.071047
        male |   2.165113   .9952842     1.68   0.093     .8794081    5.330534
         age |   1.023775   .0394241     0.61   0.542     .9493488    1.104035
       Asian |  (omitted)
       Black |   1.87e-06    .002352    -0.01   0.992            0           .
      Latino |   1.10e-06   .0011184    -0.01   0.989            0           .
       Other |   5.33e-07   .0017153    -0.00   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   1.96e+13   5.69e+16     0.01   0.992            0           .
  LatinoMale |    2007125   2.03e+09     0.01   0.989            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.003074   .0197742     0.16   0.876      .965056    1.042589
       exper |   1.076946   .0315305     2.53   0.011     1.016887    1.140552
pyperstudlep |   1.099862    .052381     2.00   0.046     1.001843    1.207471
pyperstude~s |   1.034374   .0131693     2.65   0.008     1.008882     1.06051
pyperstudw~e |   1.365689   .2502485     1.70   0.089     .9536256    1.955806
pyperstudb~k |   1.325987   .2580808     1.45   0.147     .9054555    1.941829
pyperstudl~o |   1.317514    .239871     1.51   0.130     .9221099    1.882469
pyperstudm~e |   1.009424   .0178375     0.53   0.596     .9750618    1.044997
        male |   2.856741   .8455011     3.55   0.000     1.599349    5.102682
         age |   .9370753   .0257122    -2.37   0.018     .8880114      .98885
       Asian |  (omitted)
       Black |   3.542016   3.861233     1.16   0.246     .4181539    30.00302
      Latino |   .2164203   .2638596    -1.26   0.209     .0198387    2.360928
       Other |   1.48e-07   .0002445    -0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |    3800365   9.96e+09     0.01   0.995            0           .
  LatinoMale |   2.629369   4.028998     0.63   0.528     .1304819    52.98498
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------> region = 15

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -321.49229
Iteration 1:   log likelihood = -289.41107
Iteration 2:   log likelihood = -286.80617
Iteration 3:   log likelihood =  -286.6592
Iteration 4:   log likelihood = -286.62585
Iteration 5:   log likelihood = -286.61929
Iteration 6:   log likelihood = -286.61821
Iteration 7:   log likelihood = -286.61795
Iteration 8:   log likelihood =  -286.6179
Iteration 9:   log likelihood = -286.61789

Multinomial logistic regression                 Number of obs   =        317
                                                LR chi2(30)     =      69.75
```

```
                                                Prob > chi2     =     0.0001
Log likelihood = -286.61789                     Pseudo R2       =     0.1085

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.024901     .02992     0.84   0.399     .9679052    1.085254
       exper |   .9828828   .0367415    -0.46   0.644     .9134456    1.057598
pyperstudlep |   1.021156   .0247979     0.86   0.389      .973692    1.070935
pyperstude~s |   .9844654   .0128727    -1.20   0.231      .959556    1.010021
pyperstudw~e |   .6389755   .1742464    -1.64   0.100     .3744246    1.090445
pyperstudb~k |   .6858027    .200122    -1.29   0.196     .3870907    1.215026
pyperstudl~o |   .6427249   .1746364    -1.63   0.104     .3773488    1.094731
pyperstudm~e |   1.021553   .0141524     1.54   0.124     .9941885    1.049672
        male |   2.433286   1.102055     1.96   0.050     1.001561    5.911657
         age |   .9793889   .0328233    -0.62   0.534     .9171237    1.045881
       Asian |  (omitted)
       Black |   2.19e-06   .0045477    -0.01   0.995            0           .
      Latino |   7.977139    4.96656     3.34   0.001     2.354451    27.02742
       Other |   .3687587   1065.428    -0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   .3085392    779.572    -0.00   1.000            0           .
  LatinoMale |   .3016061   .2361383    -1.53   0.126     .0650136    1.399189
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |    .986858   .0188037    -0.69   0.487     .9506832    1.024409
       exper |   1.063398   .0307272     2.13   0.033     1.004847     1.12536
pyperstudlep |   1.020935   .0215017     0.98   0.325     .9796506     1.06396
pyperstude~s |   1.028397   .0102728     2.80   0.005     1.008458     1.04873
pyperstudw~e |    1.13799   .2392517     0.61   0.539     .7536702    1.718287
pyperstudb~k |   1.156518   .2606318     0.65   0.519      .743578    1.798781
pyperstudl~o |   1.111914   .2336161     0.50   0.614     .7365999     1.67846
pyperstudm~e |   .9965469   .0133996    -0.26   0.797     .9706271    1.023159
        male |   1.653308   .5040672     1.65   0.099     .9095698    3.005187
         age |   .9583854   .0252766    -1.61   0.107     .9101028    1.009229
       Asian |  (omitted)
       Black |   3.71e-06    .005165    -0.01   0.993            0           .
      Latino |   .6800798   .4588023    -0.57   0.568     .1812649    2.551561
       Other |    5878507   8.51e+09     0.01   0.991            0           .
   AsianMale |  (omitted)
   BlackMale |   .2355186   401.2442    -0.00   0.999            0           .
  LatinoMale |   1.401016   1.137914     0.42   0.678     .2851622    6.883262
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 16

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -450.0077
Iteration 1:   log likelihood = -394.56534
Iteration 2:   log likelihood = -390.49532
Iteration 3:   log likelihood = -390.17668
Iteration 4:   log likelihood = -390.10564
Iteration 5:   log likelihood = -390.09065
Iteration 6:   log likelihood = -390.08756
Iteration 7:   log likelihood = -390.08686
Iteration 8:   log likelihood = -390.08669
Iteration 9:   log likelihood = -390.08665
Iteration 10:  log likelihood = -390.08664

Multinomial logistic regression                 Number of obs   =        432
                                                LR chi2(34)     =     119.84
```

```
                                                  Prob > chi2     =     0.0000
Log likelihood = -390.08664                       Pseudo R2       =     0.1332

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.056582   .0266933     2.18   0.029     1.005538    1.110217
       exper |   .9225433   .0303142    -2.45   0.014     .8650014     .983913
pyperstudlep |   .9773562   .0285801    -0.78   0.433     .9229152    1.035009
pyperstude~s |   .9818035   .0105445    -1.71   0.087     .9613526    1.002689
pyperstudw~e |   .9096858   .0345078    -2.50   0.013     .8445048    .9798977
pyperstudb~k |   .9549968   .0431242    -1.02   0.308     .8741073    1.043372
pyperstudl~o |   .9228832    .034385    -2.15   0.031     .8578918    .9927982
pyperstudm~e |   1.032493   .0154947     2.13   0.033     1.002567    1.063314
        male |    1.66677    .545033     1.56   0.118     .8780783    3.163867
         age |   .9848093   .0274499    -0.55   0.583     .9324517    1.040107
       Asian |   3.82e+07   2.33e+11     0.00   0.998            0           .
       Black |    .375252   .5000833    -0.74   0.462     .0275398    5.113112
      Latino |   4.092647   2.651437     2.18   0.030     1.149609    14.56996
       Other |    .590198   .8191962    -0.38   0.704     .0388623    8.963289
   AsianMale |  (omitted)
   BlackMale |   1.57e-07   .0001855    -0.01   0.989            0           .
  LatinoMale |    .380751   .4314056    -0.85   0.394     .0413235    3.508207
   OtherMale |   2.41e+07   3.93e+10     0.01   0.992            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |    1.04627   .0168855     2.80   0.005     1.013693    1.079894
       exper |   .9872598   .0235071    -0.54   0.590     .9422452    1.034425
pyperstudlep |    1.07342   .0206168     3.69   0.000     1.033763    1.114599
pyperstude~s |   1.005959   .0080654     0.74   0.459      .990275    1.021892
pyperstudw~e |   1.039743   .0406432     1.00   0.319     .9630586    1.122533
pyperstudb~k |   1.028836   .0453515     0.64   0.519     .9436804    1.121676
pyperstudl~o |   1.012058    .038989     0.31   0.756     .9384549    1.091434
pyperstudm~e |    1.01435     .01388     1.04   0.298     .9875072    1.041922
        male |   1.830166   .4566007     2.42   0.015     1.122348    2.984374
         age |   1.020616   .0229005     0.91   0.363     .9767044    1.066502
       Asian |   1.653238   15218.19     0.00   1.000            0           .
       Black |   .5576694   .6854873    -0.48   0.635     .0501279    6.204029
      Latino |   .3750554   .3878043    -0.95   0.343     .0494265    2.845975
       Other |   5.84e-07   .0006487    -0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   .7379837   1.332548    -0.17   0.866     .0214321    25.41136
  LatinoMale |   2.695601    3.63901     0.73   0.463     .1912272    37.99806
   OtherMale |   1.62e+12   3.19e+15     0.01   0.989            0           .
------------------------------------------------------------------------------


--------->  region = 17

note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -463.36597
Iteration 1:   log likelihood = -407.11943
Iteration 2:   log likelihood = -405.62968
Iteration 3:   log likelihood = -405.57229
Iteration 4:   log likelihood = -405.55977
Iteration 5:   log likelihood = -405.55716
Iteration 6:   log likelihood = -405.55673
Iteration 7:   log likelihood = -405.55663
Iteration 8:   log likelihood =  -405.5566

Multinomial logistic regression                 Number of obs   =        464
                                                LR chi2(34)     =     115.62
                                                Prob > chi2     =     0.0000
Log likelihood =  -405.5566                     Pseudo R2       =     0.1248
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.009415   .0211253     0.45   0.654     .9688475     1.05168
       exper |    1.01802   .0322354     0.56   0.573     .9567607    1.083202
pyperstudlep |   1.025921   .0477758     0.55   0.583     .9364284    1.123966
pyperstude~s |   .9764718   .0100641    -2.31   0.021     .9569445    .9963976
pyperstudw~e |    .997722   .1526101    -0.01   0.988     .7392836    1.346505
pyperstudb~k |   1.028829   .1560467     0.19   0.851     .7642545    1.384996
pyperstudl~o |   1.013978   .1529348     0.09   0.927     .7544745    1.362737
pyperstudm~e |   .9855151   .0106389    -1.35   0.177     .9648823    1.006589
        male |   2.365627   .8025416     2.54   0.011     1.216677    4.599571
         age |   1.010118   .0290303     0.35   0.726     .9547928     1.06865
       Asian |   4.83e-06   .0064444    -0.01   0.993            0           .
       Black |   1.948853    1.90714     0.68   0.495     .2862836    13.26666
      Latino |    1.12041   1.255481     0.10   0.919     .1246118    10.07384
       Other |   2.835766   4.109845     0.72   0.472     .1655895    48.56326
   AsianMale |   .5848826    1104.63    -0.00   1.000            0           .
   BlackMale |   2.168524   3.363033     0.50   0.618     .1037736    45.31496
  LatinoMale |   2.284791   3.094016     0.61   0.542     .1607561    32.47324
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.008954   .0155689     0.58   0.563     .9788967    1.039935
       exper |   1.028708   .0243215     1.20   0.231     .9821268    1.077499
pyperstudlep |   1.093904   .0326109     3.01   0.003     1.031819    1.159724
pyperstude~s |   1.013909   .0095615     1.46   0.143     .9953409    1.032824
pyperstudw~e |   1.528758   .2127941     3.05   0.002     1.163741    2.008264
pyperstudb~k |   1.500959   .2088228     2.92   0.004     1.142732    1.971485
pyperstudl~o |   1.500549   .2077494     2.93   0.003     1.143937    1.968331
pyperstudm~e |   .9891958   .0087013    -1.23   0.217     .9722877    1.006398
        male |   3.279379   .8209268     4.74   0.000     2.007754    5.356399
         age |   1.007513   .0222369     0.34   0.735     .9648588    1.052053
       Asian |   4.42e-06   .0033642    -0.02   0.987            0           .
       Black |   1.158699   1.106215     0.15   0.877     .1783711    7.526906
      Latino |   1.846647   1.131477     1.00   0.317     .5556944    6.136657
       Other |   1.345015   1.717097     0.23   0.816     .1101669    16.42114
   AsianMale |   .5722363   616.0003    -0.00   1.000            0           .
   BlackMale |   2.192966   3.383227     0.51   0.611     .1066177    45.10601
  LatinoMale |   1.598777   1.399878     0.54   0.592     .2873965    8.893942
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------> region = 18

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -399.36483
Iteration 1:   log likelihood = -360.72429
Iteration 2:   log likelihood = -358.90308
Iteration 3:   log likelihood = -358.79246
Iteration 4:   log likelihood = -358.76962
Iteration 5:   log likelihood = -358.76444
Iteration 6:   log likelihood = -358.76355
Iteration 7:   log likelihood = -358.76345
Iteration 8:   log likelihood = -358.76343

Multinomial logistic regression                 Number of obs   =        392
                                                LR chi2(32)     =      81.20
                                                Prob > chi2     =     0.0000
Log likelihood = -358.76343                     Pseudo R2       =     0.1017
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.014155   .0237158     0.60   0.548     .9687217    1.061718
       exper |   .9595555   .0292613    -1.35   0.176     .9038846    1.018655
pyperstudlep |   .9960841   .0190104    -0.21   0.837     .9595126    1.034049
pyperstude~s |   .9834924   .0140734    -1.16   0.245     .9562922    1.011466
pyperstudw~e |   .9113888   .1510453    -0.56   0.576     .6586175    1.261171
pyperstudb~k |   .9458279   .1641091    -0.32   0.748      .673165    1.328932
pyperstudl~o |   .9272896   .1536699    -0.46   0.649     .6701234    1.283146
pyperstudm~e |   1.012643   .0133608     0.95   0.341     .9867923    1.039172
        male |   2.272857   .8692114     2.15   0.032     1.074103     4.80948
         age |   1.004723   .0275605     0.17   0.864     .9521315    1.060219
       Asian |  (omitted)
       Black |   9.326176   12.04616     1.73   0.084     .7417348    117.2623
      Latino |   1.860464   1.055786     1.09   0.274     .6117543    5.658034
       Other |    3289120   2.91e+09     0.02   0.986            0           .
   AsianMale |  (omitted)
   BlackMale |   .1106237   186.8861    -0.00   0.999            0           .
  LatinoMale |   .6801617   .4890364    -0.54   0.592     .1661874    2.783724
   OtherMale |   6.54e-13   1.26e-09    -0.01   0.988            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9986111   .0160417    -0.09   0.931     .9676597    1.030553
       exper |   1.122713   .0320195     4.06   0.000     1.061678    1.187257
pyperstudlep |   1.000348   .0140481     0.02   0.980     .9731898    1.028264
pyperstude~s |   1.043279   .0117259     3.77   0.000     1.020548    1.066516
pyperstudw~e |    .924895   .1362588    -0.53   0.596     .6929317     1.23451
pyperstudb~k |   .8957949   .1368302    -0.72   0.471     .6640333    1.208446
pyperstudl~o |    .903743   .1329597    -0.69   0.491     .6773532    1.205798
pyperstudm~e |   .9920624   .0124079    -0.64   0.524      .968039    1.016682
        male |   1.660051   .4640872     1.81   0.070     .9597497    2.871343
         age |   .9194849   .0248345    -3.11   0.002      .872076     .969471
       Asian |  (omitted)
       Black |   4.263369   5.250163     1.18   0.239     .3815342    47.64008
      Latino |   1.560769   .6590661     1.05   0.292     .6821844    3.570883
       Other |    3347369   2.96e+09     0.02   0.986            0           .
   AsianMale |  (omitted)
   BlackMale |   199560.6   1.70e+08     0.01   0.989            0           .
  LatinoMale |   .4175616   .2493828    -1.46   0.144     .1295246    1.346135
   OtherMale |   2.92e-13   4.20e-10    -0.02   0.984            0           .
------------------------------------------------------------------------------


---------> region = 19

Iteration 0:   log likelihood = -804.41287
Iteration 1:   log likelihood = -738.39053
Iteration 2:   log likelihood = -736.04898
Iteration 3:   log likelihood = -735.92865
Iteration 4:   log likelihood = -735.90419
Iteration 5:   log likelihood = -735.89905
Iteration 6:   log likelihood =  -735.8979
Iteration 7:   log likelihood = -735.89762
Iteration 8:   log likelihood = -735.89756
Iteration 9:   log likelihood = -735.89755

Multinomial logistic regression                 Number of obs   =        749
                                                LR chi2(36)     =     137.03
                                                Prob > chi2     =     0.0000
Log likelihood = -735.89755                     Pseudo R2       =     0.0852

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
```

```
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.014821   .0137227     1.09   0.277     .9882783    1.042077
       exper |   1.062744   .0194712     3.32   0.001     1.025259    1.101601
pyperstudlep |   1.013418   .0061102     2.21   0.027     1.001513    1.025465
pyperstude~s |   .9945156   .0087376    -0.63   0.531     .9775367    1.011789
pyperstudw~e |   1.024104   .0872424     0.28   0.780     .8666247      1.2102
pyperstudb~k |   1.038359   .0917314     0.43   0.670     .8732735    1.234653
pyperstudl~o |   1.016839   .0819526     0.21   0.836     .8682591    1.190845
pyperstudm~e |   .9959355   .0077495    -0.52   0.601      .980862    1.011241
        male |   1.514912   .4213629     1.49   0.135     .8782769    2.613025
         age |   .9731848   .0149596    -1.77   0.077     .9443018    1.002951
       Asian |    2815105   4.26e+09     0.01   0.992            0           .
       Black |   .8969244   .5947555    -0.16   0.870     .2445228    3.289972
      Latino |   1.201751   .3012888     0.73   0.464     .7352102    1.964345
       Other |    2805790   4.25e+09     0.01   0.992            0           .
   AsianMale |   5.19e-13   9.43e-10    -0.02   0.988            0           .
   BlackMale |   .8570149   .8150474    -0.16   0.871     .1328831    5.527224
  LatinoMale |   .9708932   .3503816    -0.08   0.935     .4786134    1.969509
   OtherMale |   7.85e-13   1.65e-09    -0.01   0.989            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.048043   .0159444     3.08   0.002     1.017254    1.079764
       exper |   1.112124   .0257295     4.59   0.000     1.062822    1.163714
pyperstudlep |   1.025023   .0071035     3.57   0.000     1.011195    1.039041
pyperstude~s |   .9999658   .0106837    -0.00   0.997     .9792438    1.021126
pyperstudw~e |   1.021702   .0926263     0.24   0.813     .8553723    1.220374
pyperstudb~k |    1.04326   .0977975     0.45   0.651     .8681588    1.253678
pyperstudl~o |   1.016614   .0864594     0.19   0.846     .8605269    1.201013
pyperstudm~e |   1.005786   .0077048     0.75   0.451     .9907978    1.021001
        male |   .9421859   .3118588    -0.18   0.857     .4924852     1.80252
         age |   .9692745   .0192754    -1.57   0.117     .9322223    1.007799
       Asian |   .7720164   1935.852    -0.00   1.000            0           .
       Black |    .498934   .4359378    -0.80   0.426     .0900151    2.765481
      Latino |   .9519486   .2679453    -0.17   0.861     .5483091    1.652728
       Other |   1.119068   2806.094     0.00   1.000            0           .
   AsianMale |   2.078626   5212.214     0.00   1.000            0           .
   BlackMale |   3.227271   3.729917     1.01   0.311     .3350113    31.08933
  LatinoMale |    1.13236   .4874093     0.29   0.773     .4870751    2.632527
   OtherMale |   8.68e-06   .0265016    -0.00   0.997            0           .
------------------------------------------------------------------------------


--------->  region = 20

Iteration 0:   log likelihood = -2145.4814
Iteration 1:   log likelihood = -2023.1452
Iteration 2:   log likelihood = -2018.5162
Iteration 3:   log likelihood = -2018.2692
Iteration 4:   log likelihood = -2018.2204
Iteration 5:   log likelihood = -2018.2101
Iteration 6:   log likelihood = -2018.2078
Iteration 7:   log likelihood = -2018.2072
Iteration 8:   log likelihood = -2018.2071
Iteration 9:   log likelihood = -2018.2071

Multinomial logistic regression                 Number of obs   =       2126
                                                LR chi2(36)     =     254.55
                                                Prob > chi2     =     0.0000
Log likelihood = -2018.2071                     Pseudo R2       =     0.0593

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
```

```
-------------+----------------------------------------------------------------
2            |
      tenure |   1.003445    .008425     0.41   0.682     .9870676    1.020095
       exper |   .9962515   .0106268    -0.35   0.725     .9756394    1.017299
pyperstudlep |   .9827673   .0074699    -2.29   0.022     .9682351    .9975177
pyperstude~s |   1.000429   .0045876     0.09   0.925      .991478    1.009462
pyperstudw~e |   .9304018   .0377562    -1.78   0.075     .8592673    1.007425
pyperstudb~k |   .9274918   .0397623    -1.76   0.079     .8527435    1.008792
pyperstudl~o |   .9314045   .0378117    -1.75   0.080     .8601667    1.008542
pyperstudm~e |    1.00206   .0039031     0.53   0.597      .994439    1.009739
        male |   1.542135   .2211904     3.02   0.003     1.164216    2.042732
         age |    .967398   .0088941    -3.61   0.000      .950122    .9849882
       Asian |   8.25e-07   .0004957    -0.02   0.981            0           .
       Black |   1.124564   .3490047     0.38   0.705      .612092    2.066102
      Latino |   1.247139   .2026248     1.36   0.174     .9070236     1.71479
       Other |   2.169207   1.797534     0.93   0.350     .4275085    11.00671
   AsianMale |    2074025   1.25e+09     0.02   0.981            0           .
   BlackMale |   1.107249   .5328281     0.21   0.832      .431153    2.843536
  LatinoMale |   1.428741    .339189     1.50   0.133     .8971701    2.275267
   OtherMale |   .4062455   .6111956    -0.60   0.549     .0212891    7.752105
-------------+----------------------------------------------------------------
3            |
      tenure |   1.024478   .0083507     2.97   0.003     1.008241    1.040976
       exper |   1.081761   .0143639     5.92   0.000     1.053972    1.110284
pyperstudlep |   1.020186   .0067314     3.03   0.002     1.007078    1.033465
pyperstude~s |   1.022299   .0052424     4.30   0.000     1.012075    1.032625
pyperstudw~e |   1.048215    .049684     0.99   0.320     .9552226    1.150261
pyperstudb~k |   1.016989   .0505491     0.34   0.735     .9225871     1.12105
pyperstudl~o |   1.018309   .0482107     0.38   0.702     .9280693    1.117323
pyperstudm~e |   1.011631   .0039386     2.97   0.003     1.003941     1.01938
        male |   1.402866   .2180824     2.18   0.029      1.03441    1.902566
         age |   .9538702   .0115911    -3.89   0.000     .9314205     .976861
       Asian |   1.55e-06   .0009738    -0.02   0.983            0           .
       Black |   1.171236   .3505904     0.53   0.597     .6514046      2.1059
      Latino |   .9706111   .1664639    -0.17   0.862     .6935225    1.358407
       Other |   1.677882   2.000804     0.43   0.664     .1620837    17.36935
   AsianMale |    1.28608   1476.465     0.00   1.000            0           .
   BlackMale |   1.132549   .5770472     0.24   0.807      .417215    3.074357
  LatinoMale |   1.120282   .2940878     0.43   0.665     .6696941    1.874037
   OtherMale |   1.515423   2.296183     0.27   0.784     .0777652    29.53128
------------------------------------------------------------------------------
by pyschooltype:

. bysort pyschooltype: mlogit admin  tenure exper  pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile male age A
> sian Black Latino Other AsianMale BlackMale LatinoMale OtherMale if validcert2001a==1,
rrr


---------->  pyschooltype =

note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -507.82875
Iteration 1:   log likelihood = -471.66774
Iteration 2:   log likelihood = -470.43273
Iteration 3:   log likelihood = -470.32943
Iteration 4:   log likelihood = -470.30677
Iteration 5:   log likelihood = -470.30208
Iteration 6:   log likelihood =  -470.3013
Iteration 7:   log likelihood = -470.30112
Iteration 8:   log likelihood = -470.30108
Iteration 9:   log likelihood = -470.30107

Multinomial logistic regression                 Number of obs   =        475
                                                LR chi2(34)     =      75.06
                                                Prob > chi2     =     0.0001
Log likelihood = -470.30107                     Pseudo R2       =     0.0739
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.039103   .0185927     2.14   0.032     1.003294    1.076191
       exper |   1.007311   .0236646     0.31   0.757     .9619805    1.054777
pyperstudlep |   1.007424   .0114001     0.65   0.513     .9853263    1.030018
pyperstude~s |   .9873429   .0107122    -1.17   0.240     .9665689    1.008563
pyperstudw~e |   .9910214   .0451715    -0.20   0.843     .9063263    1.083631
pyperstudb~k |   1.005053   .0500779     0.10   0.919     .9115427    1.108156
pyperstudl~o |   1.000772   .0468655     0.02   0.987     .9130064    1.096974
pyperstudm~e |   .9606394   .0172626    -2.23   0.025     .9273942    .9950764
        male |   2.191694   .6371114     2.70   0.007      1.23977    3.874528
         age |   .9509162   .0193347    -2.48   0.013     .9137661    .9895766
       Asian |   3.52e-07   .0004699    -0.01   0.991            0           .
       Black |   1.415717   .6854193     0.72   0.473     .5481096    3.656669
      Latino |    1.48205   .6615691     0.88   0.378     .6178696    3.554912
       Other |   6.07e-07   .0011599    -0.01   0.994            0           .
   AsianMale |   .9774726   2277.439    -0.00   1.000            0           .
   BlackMale |   .5208875    .395629    -0.86   0.390     .1175525    2.308107
  LatinoMale |    1.04389   .6438535     0.07   0.944     .3116364    3.496723
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.016583   .0173632     0.96   0.336     .9831152     1.05119
       exper |   1.041966   .0247791     1.73   0.084     .9945147    1.091682
pyperstudlep |   1.022602   .0126531     1.81   0.071     .9981011    1.047705
pyperstude~s |   1.006008    .010255     0.59   0.557     .9861079    1.026309
pyperstudw~e |   .9391152   .0403886    -1.46   0.144     .8631994    1.021707
pyperstudb~k |   .9257625   .0444724    -1.61   0.108     .8425758    1.017162
pyperstudl~o |   .9142723   .0405727    -2.02   0.043     .8381114    .9973541
pyperstudm~e |   .9974222    .010486    -0.25   0.806     .9770803    1.018188
        male |     1.7768   .5231355     1.95   0.051      .997753    3.164129
         age |   .9738976   .0211267    -1.22   0.223     .9333578    1.016198
       Asian |   4.91e-07    .000706    -0.01   0.992            0           .
       Black |   .6011805   .3762817    -0.81   0.416     .1762925    2.050104
      Latino |   2.290212   1.059789     1.79   0.073     .9246653    5.672399
       Other |   2.19e-07    .000445    -0.01   0.994            0           .
   AsianMale |   1.064008   2647.485     0.00   1.000            0           .
   BlackMale |   1.249796   1.144214     0.24   0.808     .2077528    7.518503
  LatinoMale |    .739992   .5106196    -0.44   0.663     .1913679    2.861442
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------> pyschooltype = B

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -629.64743
Iteration 1:   log likelihood = -596.40442
Iteration 2:   log likelihood = -592.70771
Iteration 3:   log likelihood = -592.50462
Iteration 4:   log likelihood = -592.49465
Iteration 5:   log likelihood = -592.49266
Iteration 6:   log likelihood = -592.49225
Iteration 7:   log likelihood = -592.49215
Iteration 8:   log likelihood = -592.49212

Multinomial logistic regression                 Number of obs   =        661
                                                LR chi2(34)     =      74.31
                                                Prob > chi2     =     0.0001
Log likelihood = -592.49212                     Pseudo R2       =     0.0590

------------------------------------------------------------------------------
```

```
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.023633   .0203631     1.17   0.240     .9844898    1.064332
       exper |   .9841556   .0252757    -0.62   0.534     .9358422    1.034963
pyperstudlep |    1.01351   .0119917     1.13   0.257     .9902773    1.037288
pyperstude~s |   .9865618   .0073514    -1.82   0.069     .9722581    1.001076
pyperstudw~e |   .9761108   .0407489    -0.58   0.562     .8994245    1.059335
pyperstudb~k |    .994914   .0433456    -0.12   0.907     .9134842    1.083603
pyperstudl~o |   .9889478    .041654    -0.26   0.792     .9105863    1.074053
pyperstudm~e |   .9989857   .0044889    -0.23   0.821     .9902262    1.007823
        male |   1.214634   .3959353     0.60   0.551     .6411779    2.300977
         age |   .9661207   .0212684    -1.57   0.117      .925322    1.008718
       Asian |   .0000302   .0129705    -0.02   0.981            0           .
       Black |   2.128149   1.096359     1.47   0.143     .7753337    5.841382
      Latino |   1.798976   1.130096     0.93   0.350     .5251826    6.162263
       Other |   5.40e+07   1.70e+11     0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   1.441227    .964411     0.55   0.585     .3882779     5.34961
  LatinoMale |   1.469521   1.139246     0.50   0.620     .3215748    6.715362
   OtherMale |   2.87e-07   .0009033    -0.00   0.996            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9851633   .0118533    -1.24   0.214      .962203    1.008672
       exper |   1.033713   .0168893     2.03   0.042     1.001135    1.067351
pyperstudlep |   1.011626   .0092063     1.27   0.204     .9937418    1.029832
pyperstude~s |   .9967983   .0050275    -0.64   0.525     .9869931    1.006701
pyperstudw~e |   1.049021    .039268     1.28   0.201     .9748121    1.128878
pyperstudb~k |   1.049037    .040527     1.24   0.215     .9725384    1.131553
pyperstudl~o |   1.044602   .0392014     1.16   0.245     .9705263    1.124332
pyperstudm~e |   1.006183   .0032185     1.93   0.054      .999895    1.012511
        male |   1.521073   .3063855     2.08   0.037     1.024931    2.257383
         age |   .9864987   .0149131    -0.90   0.369     .9576984    1.016165
       Asian |   1.807918   2.604225     0.41   0.681     .1074141     30.4296
       Black |   .9944014    .459529    -0.01   0.990      .401983     2.45989
      Latino |   .4355326   .2968218    -1.22   0.223     .1145287    1.656254
       Other |   1.330428   6915.592     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   .6715775   .4386445    -0.61   0.542     .1866935    2.415812
  LatinoMale |   4.265544   3.300706     1.87   0.061     .9360717    19.43747
   OtherMale |   1.257204   6534.974     0.00   1.000            0           .
------------------------------------------------------------------------------


---------> pyschooltype = E

Iteration 0:   log likelihood = -9634.2184
Iteration 1:   log likelihood = -9023.5899
Iteration 2:   log likelihood = -9017.2058
Iteration 3:   log likelihood = -9017.2007
Iteration 4:   log likelihood = -9017.2007

Multinomial logistic regression                 Number of obs   =       8982
                                                LR chi2(36)     =    1234.04
                                                Prob > chi2     =     0.0000
Log likelihood = -9017.2007                     Pseudo R2       =     0.0640

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.002776   .0046131     0.60   0.547     .9937751    1.011858
       exper |   1.000384   .0060941     0.06   0.950     .9885105    1.012399
```

```
pyperstudlep |   1.012438   .0021688     5.77   0.000     1.008196    1.016698
pyperstude~s |   .9812818   .0023214    -7.99   0.000     .9767425    .9858423
pyperstudw~e |   .9899991   .0066845    -1.49   0.137      .976984    1.003188
pyperstudb~k |   .9958713   .0073099    -0.56   0.573     .9816467    1.010302
pyperstudl~o |   .9960464   .0069932    -0.56   0.573     .9824339    1.009847
pyperstudm~e |   1.014898   .0038813     3.87   0.000     1.007319    1.022533
        male |    1.87265   .1721171     6.83   0.000     1.563946    2.242288
         age |   .9745343   .0047891    -5.25   0.000     .9651929     .983966
       Asian |   .9842148   .4272507    -0.04   0.971     .4203205    2.304619
       Black |   1.391118   .1506765     3.05   0.002     1.125039    1.720127
      Latino |   1.103067   .1020857     1.06   0.289     .9200803    1.322447
       Other |   .6964304   .2758524    -0.91   0.361     .3204213     1.51368
   AsianMale |   .9830958   .7478692    -0.02   0.982     .2213413    4.366458
   BlackMale |   .8827888   .1919108    -0.57   0.566     .5765179    1.351764
  LatinoMale |   .6404233   .1063571    -2.68   0.007     .4624933    .8868064
   OtherMale |   .4849176   .3776596    -0.93   0.353     .1053761    2.231484
-------------+----------------------------------------------------------------
3            |
      tenure |   1.014572   .0037725     3.89   0.000     1.007204    1.021993
       exper |   1.067187   .0059078    11.75   0.000     1.055671     1.07883
pyperstudlep |   1.001921   .0019386     0.99   0.321     .9981285    1.005728
pyperstude~s |   1.003191   .0021116     1.51   0.130     .9990611    1.007339
pyperstudw~e |   1.009679    .006873     1.42   0.157     .9962979     1.02324
pyperstudb~k |    .997118   .0073419    -0.39   0.695     .9828315    1.011612
pyperstudl~o |   1.000382   .0070771     0.05   0.957     .9866066    1.014349
pyperstudm~e |   1.002841    .003634     0.78   0.434     .9957433    1.009989
        male |   3.020523   .2365582    14.11   0.000     2.590709    3.521646
         age |   .9833961   .0046392    -3.55   0.000     .9743454    .9925309
       Asian |   .4758559   .2765829    -1.28   0.201     .1523104    1.486694
       Black |   1.088376   .1141245     0.81   0.419     .8861844      1.3367
      Latino |   1.144568   .0972483     1.59   0.112     .9689899    1.351961
       Other |   .4435213   .1856172    -1.94   0.052       .19529    1.007277
   AsianMale |    .637397   .6127144    -0.47   0.639     .0968658    4.194205
   BlackMale |   .6069128   .1259066    -2.41   0.016     .4041485    .9114054
  LatinoMale |   .5115076   .0751909    -4.56   0.000     .3834659    .6823034
   OtherMale |   .3241209   .2601414    -1.40   0.160     .0672245     1.56274
------------------------------------------------------------------------------


---------->  pyschooltype = M

Iteration 0:   log likelihood = -5433.1562
Iteration 1:   log likelihood = -5123.8548
Iteration 2:   log likelihood =  -5118.047
Iteration 3:   log likelihood = -5117.8195
Iteration 4:   log likelihood = -5117.7703
Iteration 5:   log likelihood = -5117.7598
Iteration 6:   log likelihood = -5117.7576
Iteration 7:   log likelihood = -5117.7572
Iteration 8:   log likelihood =  -5117.757
Iteration 9:   log likelihood =  -5117.757

Multinomial logistic regression                 Number of obs   =       5121
                                                LR chi2(36)     =     630.80
                                                Prob > chi2     =     0.0000
Log likelihood =  -5117.757                     Pseudo R2       =     0.0581

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.016585   .0052446     3.19   0.001     1.006358    1.026916
       exper |   .9945893   .0066263    -0.81   0.415     .9816863    1.007662
pyperstudlep |    1.00923   .0038548     2.41   0.016     1.001703    1.016814
pyperstude~s |   .9936716     .00288    -2.19   0.028     .9880429    .9993323
```

```
pyperstudw~e |   .9775266   .0088853    -2.50   0.012     .9602661    .9950975
pyperstudb~k |   .9816488   .0097293    -1.87   0.062     .9627637    1.000904
pyperstudl~o |   .9770518   .0093654    -2.42   0.015     .9588674    .9955811
pyperstudm~e |    1.00878   .0036061     2.45   0.014     1.001737    1.015873
        male |   1.643337    .136917     5.96   0.000      1.39575    1.934843
         age |   .9638101   .0054145    -6.56   0.000     .9532561     .974481
       Asian |    .420573   .3404927    -1.07   0.285     .0860429    2.055738
       Black |   1.271657   .1684732     1.81   0.070      .980844    1.648693
      Latino |   1.856898   .2495344     4.61   0.000     1.426926    2.416432
       Other |   .6596722   .3006016    -0.91   0.361     .2700535    1.611412
   AsianMale |   1.060207   1.226011     0.05   0.960     .1099185    10.22611
   BlackMale |   1.167089   .2276903     0.79   0.428     .7962347    1.710673
  LatinoMale |   1.103119   .1936995     0.56   0.576      .781912    1.556278
   OtherMale |   1.333617   .8684906     0.44   0.658     .3721376    4.779237
-------------+----------------------------------------------------------------
3            |
      tenure |   1.007394    .005105     1.45   0.146     .9974381     1.01745
       exper |   1.074575   .0085165     9.08   0.000     1.058012    1.091397
pyperstudlep |    .999455   .0047056    -0.12   0.908     .9902746     1.00872
pyperstude~s |   1.007754   .0032564     2.39   0.017     1.001392    1.014157
pyperstudw~e |   1.027081    .012544     2.19   0.029     1.002787    1.051963
pyperstudb~k |   1.008672   .0132943     0.66   0.512      .982949    1.035067
pyperstudl~o |   1.011958   .0129136     0.93   0.352     .9869618    1.037587
pyperstudm~e |   1.006784   .0042649     1.60   0.111     .9984591    1.015178
        male |   2.270421   .2045529     9.10   0.000     1.902907    2.708913
         age |    .954056   .0069531    -6.45   0.000     .9405251    .9677816
       Asian |   2.68e-06    .001158    -0.03   0.976            0           .
       Black |   1.155263   .1988262     0.84   0.402     .8244894    1.618739
      Latino |   1.577792   .2594034     2.77   0.006     1.143153    2.177685
       Other |    .213621   .2213704    -1.49   0.136     .0280262    1.628261
   AsianMale |   543267.9   2.35e+08     0.03   0.976            0           .
   BlackMale |    1.23726   .2898412     0.91   0.363     .7817326    1.958231
  LatinoMale |   .9096542   .1870497    -0.46   0.645     .6079195    1.361152
   OtherMale |   3.885109   4.451044     1.18   0.236     .4113477     36.6942
------------------------------------------------------------------------------


---------->  pyschooltype = S

Iteration 0:   log likelihood = -6615.7138
Iteration 1:   log likelihood =  -6279.478
Iteration 2:   log likelihood = -6262.4275
Iteration 3:   log likelihood = -6262.1018
Iteration 4:   log likelihood = -6262.0331
Iteration 5:   log likelihood = -6262.0162
Iteration 6:   log likelihood = -6262.0128
Iteration 7:   log likelihood = -6262.0121
Iteration 8:   log likelihood = -6262.0119
Iteration 9:   log likelihood = -6262.0118
Iteration 10:  log likelihood = -6262.0118

Multinomial logistic regression                 Number of obs   =       6749
                                                LR chi2(36)     =     707.40
                                                Prob > chi2     =     0.0000
Log likelihood = -6262.0118                     Pseudo R2       =     0.0535

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.006823   .0039734     1.72   0.085     .9990652    1.014641
       exper |   .9974584    .005473    -0.46   0.643      .986789    1.008243
pyperstudlep |   1.017066   .0041328     4.16   0.000     1.008998    1.025198
pyperstude~s |   .9913631   .0023124    -3.72   0.000     .9868412    .9959056
pyperstudw~e |   .9821203   .0069566    -2.55   0.011     .9685797    .9958501
```

```
pyperstudb~k |   .9877386   .0075549    -1.61   0.107     .9730417    1.002658
pyperstudl~o |   .9837837   .0073386    -2.19   0.028     .9695049    .9982727
pyperstudm~e |     .99887   .0023531    -0.48   0.631     .9942687    1.003493
        male |   1.089677   .0763532     1.23   0.220     .9498489     1.25009
         age |    .970447   .0049296    -5.91   0.000     .9608331    .9801572
       Asian |   .6916668   .4671382    -0.55   0.585     .1840823    2.598853
       Black |   1.303896   .1684489     2.05   0.040     1.012225    1.679611
      Latino |   1.418033   .1793526     2.76   0.006     1.106691    1.816963
       Other |   .7963767   .4694272    -0.39   0.699     .2508272    2.528497
   AsianMale |   2.046738   1.774552     0.83   0.409     .3741605    11.19609
   BlackMale |   1.917391   .3301055     3.78   0.000     1.368247    2.686933
  LatinoMale |   1.670229   .2585077     3.31   0.001     1.233196    2.262141
   OtherMale |   2.187924   1.571718     1.09   0.276     .5352573    8.943383
-------------+----------------------------------------------------------------
3            |
      tenure |   .9930059   .0045463    -1.53   0.125     .9841352    1.001957
       exper |   1.055733   .0078075     7.33   0.000     1.040541    1.071147
pyperstudlep |   1.002751   .0057381     0.48   0.631     .9915677    1.014061
pyperstude~s |   1.015057   .0027777     5.46   0.000     1.009628    1.020516
pyperstudw~e |   1.043761   .0131965     3.39   0.001     1.018214    1.069948
pyperstudb~k |   1.026941   .0137004     1.99   0.046     1.000437    1.054147
pyperstudl~o |   1.025107   .0133552     1.90   0.057     .9992623    1.051619
pyperstudm~e |   1.021752   .0022064     9.96   0.000     1.017437    1.026086
        male |   2.138103   .2006325     8.10   0.000     1.778913     2.56982
         age |   .9647532   .0069662    -4.97   0.000     .9511959    .9785037
       Asian |    .774942   .8238682    -0.24   0.810     .0964554    6.226036
       Black |   .8655475   .1941949    -0.64   0.520     .5575896    1.343591
      Latino |   1.313064   .2470658     1.45   0.148     .9080803    1.898663
       Other |   2.091599   1.267188     1.22   0.223     .6379414    6.857662
   AsianMale |   2.80e-07   .0003838    -0.01   0.991            0           .
   BlackMale |   1.586627   .4331897     1.69   0.091     .9291266    2.709409
  LatinoMale |   1.035948   .2262742     0.16   0.872     .6751749    1.589495
   OtherMale |   1.106001    .825309     0.14   0.893     .2562008     4.77453
------------------------------------------------------------------------------
```

2001-02

```
. mlogit admin  tenure exper  charter pyperstudlep pyperstudecodis pyperstudwhite
pyperstudblack pyperstudlatino pyperstudmobile male age Asian Black La
> tino Other AsianMale BlackMale LatinoMale OtherMale if validcert2002a==1, rrr

Iteration 0:   log likelihood = -23853.169
Iteration 1:   log likelihood = -22777.084
Iteration 2:   log likelihood = -22760.604
Iteration 3:   log likelihood = -22760.563
Iteration 4:   log likelihood = -22760.563

Multinomial logistic regression                 Number of obs   =      22452
                                                LR chi2(38)     =    2185.21
                                                Prob > chi2     =     0.0000
Log likelihood = -22760.563                     Pseudo R2       =     0.0458

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.006429   .0024759     2.60   0.009     1.001587    1.011293
       exper |   .9995665   .0032656    -0.13   0.894     .9931865    1.005988
     charter |   .2492319    .135299    -2.56   0.010     .0860037    .7222543
pyperstudlep |    1.00921   .0014202     6.51   0.000      1.00643    1.011997
pyperstude~s |   .9920884   .0012058    -6.54   0.000     .9897278    .9944546
pyperstudw~e |   .9791736   .0039466    -5.22   0.000     .9714689    .9869394
pyperstudb~k |   .9855781   .0043024    -3.33   0.001     .9771815    .9940468
pyperstudl~o |   .9828585   .0041166    -4.13   0.000     .9748232      .99096
pyperstudm~e |   .9994773   .0014311    -0.37   0.715     .9966764    1.002286
```

```
        male |   1.263669   .0526795     5.61   0.000     1.164525    1.371255
         age |   .9698906    .002717   -10.91   0.000     .9645801    .9752305
       Asian |   .6820608    .220952    -1.18   0.238      .361475    1.286968
       Black |   1.186183   .0795683     2.55   0.011     1.040049     1.35285
      Latino |   1.276931   .0789017     3.96   0.000     1.131284    1.441329
       Other |   .7757512   .1903223    -1.03   0.301     .4796111    1.254746
   AsianMale |    3.50857   1.761329     2.50   0.012     1.311658    9.385118
   BlackMale |    1.58399   .1633924     4.46   0.000     1.294044    1.938902
  LatinoMale |   1.250558   .1082416     2.58   0.010     1.055428    1.481765
   OtherMale |   1.518227   .5357127     1.18   0.237     .7603032    3.031704
-------------+----------------------------------------------------------------
3            |
      tenure |    1.01341   .0022874     5.90   0.000     1.008936    1.017903
       exper |   1.053444    .003629    15.11   0.000     1.046355    1.060581
     charter |   2.635046   .7835185     3.26   0.001     1.471254    4.719424
pyperstudlep |   1.012443    .001441     8.69   0.000     1.009622    1.015271
pyperstude~s |   1.019614   .0012575    15.75   0.000     1.017152    1.022081
pyperstudw~e |   1.009426   .0047659     1.99   0.047     1.000129    1.018811
pyperstudb~k |   .9900103   .0050494    -1.97   0.049      .980163    .9999566
pyperstudl~o |   .9862124   .0048351    -2.83   0.005     .9767812    .9957346
pyperstudm~e |   1.002629   .0014327     1.84   0.066     .9998246    1.005441
        male |   1.364057   .0557732     7.59   0.000     1.259008     1.47787
         age |   .9748522   .0030371    -8.18   0.000     .9689177     .980823
       Asian |   .5836579   .2347449    -1.34   0.181     .2653436    1.283832
       Black |   .8429512   .0633563    -2.27   0.023     .7274883    .9767397
      Latino |   1.189777   .0767317     2.69   0.007     1.048503    1.350087
       Other |    .493113   .1462318    -2.38   0.017     .2757555    .8817972
   AsianMale |   1.711785   1.059044     0.87   0.385     .5091308    5.755316
   BlackMale |   1.551649   .1796477     3.79   0.000     1.236638    1.946904
  LatinoMale |   1.041761   .0948232     0.45   0.653      .871545     1.24522
   OtherMale |   2.209522   .8849898     1.98   0.048     1.007773    4.844332
------------------------------------------------------------------------------
. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=22452)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     35.304    2    0.000
       exper |    267.052    2    0.000
     charter |     27.063    2    0.000
pyperstudlep |     88.085    2    0.000
pyperstude~s |    416.516    2    0.000
pyperstudw~e |     44.401    2    0.000
pyperstudb~k |     11.796    2    0.003
pyperstudl~o |     19.230    2    0.000
pyperstudm~e |      4.374    2    0.112
        male |     68.259    2    0.000
         age |    148.323    2    0.000
       Asian |      2.707    2    0.258
       Black |     17.138    2    0.000
      Latino |     17.640    2    0.000
       Other |      6.527    2    0.038
   AsianMale |      6.499    2    0.039
   BlackMale |     25.131    2    0.000
  LatinoMale |      7.039    2    0.030
   OtherMale |      4.409    2    0.110
---------------------------------------

**** Wald tests for independent variables (N=22452)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
```

```
      tenure |     35.151    2    0.000
       exper |    252.363    2    0.000
     charter |     22.307    2    0.000
pyperstudlep |     86.785    2    0.000
pyperstude~s |    402.238    2    0.000
pyperstudw~e |     44.853    2    0.000
pyperstudb~k |     11.741    2    0.003
pyperstudl~o |     19.075    2    0.000
pyperstudm~e |      4.442    2    0.109
        male |     68.053    2    0.000
         age |    146.031    2    0.000
       Asian |      2.619    2    0.270
       Black |     17.081    2    0.000
      Latino |     17.636    2    0.000
       Other |      5.954    2    0.051
   AsianMale |      6.252    2    0.044
   BlackMale |     24.762    2    0.000
  LatinoMale |      7.042    2    0.030
   OtherMale |      4.322    2    0.115
-----------------------------------------

**** Hausman tests of IIA assumption (N=22452)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+-----------------------------------
       2 |   -13.309   19     ---    ---
       3 |   -23.101   19     ---    ---
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=22452)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+------------------------------------------------------
       2 |  -5144.238  -5127.540  33.397   20    0.031   against Ho
       3 |  -5281.821  -5273.946  15.749   20    0.732   for Ho
-------------------------------------------------------------------

**** Wald tests for combining alternatives (N=22452)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+-----------------------
       2-       3  | 1435.768   19    0.000
       2-       1  |  608.293   19    0.000
       3-       1  | 1077.436   19    0.000
-----------------------------------------------

**** LR tests for combining alternatives (N=22452)

 Ho: All coefficients except intercepts associated with a
given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+-----------------------
       2-       3  | 1608.034   19    0.000
       2-       1  |  635.102   19    0.000
       3-       1  | 1177.128   19    0.000
by region:
```

```
. bysort region: mlogit admin  tenure exper  charter pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile male age
>  Asian Black Latino Other AsianMale BlackMale LatinoMale OtherMale if
validcert2002a==1, rrr


---------->  region = 1

Iteration 0:   log likelihood = -1611.3439
Iteration 1:   log likelihood = -1518.2811
Iteration 2:   log likelihood =   -1515.72
Iteration 3:   log likelihood = -1515.4035
Iteration 4:   log likelihood = -1515.3531
Iteration 5:   log likelihood = -1515.3406
Iteration 6:   log likelihood = -1515.3378
Iteration 7:   log likelihood = -1515.3372
Iteration 8:   log likelihood = -1515.3371
Iteration 9:   log likelihood = -1515.3371

Multinomial logistic regression                 Number of obs   =       1489
                                                LR chi2(38)     =     192.01
                                                Prob > chi2     =     0.0000
Log likelihood = -1515.3371                     Pseudo R2       =     0.0596

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.01484   .0097334     1.54   0.125     .9959415    1.034098
       exper |   1.030173    .015149     2.02   0.043     1.000906    1.060297
     charter |   .7475102   2235.383    -0.00   1.000            0           .
pyperstudlep |   1.003964   .0034931     1.14   0.256     .9971407    1.010834
pyperstude~s |   1.001412   .0062425     0.23   0.821     .9892512    1.013722
pyperstudw~e |   .9801592   .1117841    -0.18   0.861     .7838261     1.22567
pyperstudb~k |    .798724   .1539529    -1.17   0.244     .5474303    1.165372
pyperstudl~o |   .9623729   .1020265    -0.36   0.718     .7818127    1.184634
pyperstudm~e |   .9980491   .0052226    -0.37   0.709     .9878652    1.008338
        male |   1.896037   .5394606     2.25   0.025     1.085583    3.311546
         age |   .9403391   .0121359    -4.77   0.000     .9168515    .9644284
       Asian |   4.11e-07    .000622    -0.01   0.992            0           .
       Black |    4822984   7.83e+09     0.01   0.992            0           .
      Latino |   1.015835   .2213715     0.07   0.943     .6627184    1.557104
       Other |   1.38e-06   .0008572    -0.02   0.983            0           .
   AsianMale |   3.44e+12   7.63e+15     0.01   0.990            0           .
   BlackMale |   2.03e-07   .0003302    -0.01   0.992            0           .
  LatinoMale |   .9493755   .3016261    -0.16   0.870     .5093342    1.769592
   OtherMale |   2.84e+11   2.89e+14     0.03   0.979            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.033015   .0100263     3.35   0.001      1.01355    1.052855
       exper |    1.07801   .0181223     4.47   0.000     1.043069     1.11412
     charter |    5226407   1.03e+10     0.01   0.994            0           .
pyperstudlep |   1.016169   .0036619     4.45   0.000     1.009017    1.023371
pyperstude~s |   1.002762   .0070263     0.39   0.694     .9890851    1.016629
pyperstudw~e |   .9606586   .1234455    -0.31   0.755     .7467735    1.235803
pyperstudb~k |   1.022375   .1317529     0.17   0.864     .7941748    1.316146
pyperstudl~o |   .9489595   .1126975    -0.44   0.659     .7518996    1.197665
pyperstudm~e |   1.003118   .0053843     0.58   0.562     .9926202    1.013727
        male |   .6218887   .2319017    -1.27   0.203     .2994336    1.291591
         age |   .9476418   .0143925    -3.54   0.000     .9198487    .9762746
       Asian |   7.67e-07   .0012699    -0.01   0.993            0           .
       Black |   2.670714   6922.544     0.00   1.000            0           .
      Latino |   1.008183   .2316933     0.04   0.972     .6425726    1.581817
       Other |   .6087267   .7309653    -0.41   0.679     .0578483    6.405512
```

```
   AsianMale |    4821579   1.48e+10     0.01   0.996            0           .
   BlackMale |   8.79e-07   .0024032    -0.01   0.996            0           .
  LatinoMale |   2.406733   .9680794     2.18   0.029     1.094063     5.29436
   OtherMale |    2495411   2.02e+09     0.02   0.985            0           .
-------------------------------------------------------------------------------


---------->  region = 2

Iteration 0:   log likelihood = -812.55779
Iteration 1:   log likelihood = -770.93265
Iteration 2:   log likelihood =  -769.7764
Iteration 3:   log likelihood = -769.60916
Iteration 4:   log likelihood = -769.58187
Iteration 5:   log likelihood = -769.57907
Iteration 6:   log likelihood =  -769.5785
Iteration 7:   log likelihood = -769.57837
Iteration 8:   log likelihood = -769.57835
Iteration 9:   log likelihood = -769.57834

Multinomial logistic regression                 Number of obs   =        825
                                                LR chi2(38)     =      85.96
                                                Prob > chi2     =     0.0000
Log likelihood = -769.57834                     Pseudo R2       =     0.0529

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.010298    .015164     0.68   0.495     .9810103     1.04046
       exper |   .9802698    .018748    -1.04   0.297     .9442045    1.017713
     charter |   3.949196    5.54946     0.98   0.328     .2514142     62.0337
pyperstudlep |   .9754634   .0181131    -1.34   0.181     .9406005    1.011618
pyperstude~s |   1.010523   .0066363     1.59   0.111     .9975999    1.023615
pyperstudw~e |   .8829396    .068334    -1.61   0.108     .7586706    1.027564
pyperstudb~k |   .8902011   .0689054    -1.50   0.133     .7648944    1.036036
pyperstudl~o |   .8863913   .0645254    -1.66   0.098     .7685317    1.022326
pyperstudm~e |   .9917384   .0079517    -1.03   0.301     .9762753    1.007447
        male |   1.473764   .4169364     1.37   0.170     .8464827    2.565889
         age |   .9794557    .015255    -1.33   0.183     .9500081    1.009816
       Asian |   7.45e+07   3.60e+11     0.00   0.997            0           .
       Black |   4.142313   3.166887     1.86   0.063      .925723    18.53552
      Latino |   1.169643   .3174797     0.58   0.564     .6870829     1.99112
       Other |   5.32e-07   .0014844    -0.01   0.996            0           .
   AsianMale |   5.92e-15   3.31e-11    -0.01   0.995            0           .
   BlackMale |   1.222222   1.307376     0.19   0.851     .1501912    9.946174
  LatinoMale |   1.037457   .4075486     0.09   0.925     .4803844    2.240532
   OtherMale |    2511678   7.01e+09     0.01   0.996            0           .
-------------+-----------------------------------------------------------------
3            |
      tenure |   1.000849   .0120825     0.07   0.944     .9774457    1.024813
       exper |   1.050736   .0185405     2.80   0.005     1.015019     1.08771
     charter |   3.328493   3.896991     1.03   0.304     .3354775    33.02418
pyperstudlep |   .9914692   .0156459    -0.54   0.587     .9612731    1.022614
pyperstude~s |   1.021397   .0064538     3.35   0.001     1.008826    1.034125
pyperstudw~e |    1.20141   .0977953     2.25   0.024     1.024244    1.409222
pyperstudb~k |     1.1253    .096652     1.37   0.169     .9509525    1.331613
pyperstudl~o |   1.173704   .0910928     2.06   0.039     1.008082    1.366538
pyperstudm~e |   .9972462    .007571    -0.36   0.716     .9825172    1.012196
        male |   1.134039   .2934932     0.49   0.627     .6828643    1.883311
         age |   .9638167   .0155899    -2.28   0.023     .9337404    .9948618
       Asian |   1.072877   9385.916     0.00   1.000            0           .
       Black |    3.03468   2.301651     1.46   0.143     .6863093    13.41856
      Latino |   .8685479   .2140495    -0.57   0.567     .5358204    1.407889
       Other |   7.92e-07   .0019403    -0.01   0.995            0           .
```

```
   AsianMale |   8.12e-07    .007374    -0.00   0.999           0           .
   BlackMale |   1.849271   1.973706     0.58   0.565     .2283087    14.97885
  LatinoMale |   1.720627   .6192068     1.51   0.132     .8498896    3.483461
   OtherMale |   1.835226   4885.659     0.00   1.000           0           .
-------------------------------------------------------------------------------


---------->  region = 3

note: charter omitted because of collinearity
note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -317.82146
Iteration 1:   log likelihood = -292.04918
Iteration 2:   log likelihood = -291.32113
Iteration 3:   log likelihood = -291.22943
Iteration 4:   log likelihood = -291.21446
Iteration 5:   log likelihood =   -291.211
Iteration 6:   log likelihood = -291.21019
Iteration 7:   log likelihood = -291.21002
Iteration 8:   log likelihood = -291.20999
Iteration 9:   log likelihood = -291.20999

Multinomial logistic regression                 Number of obs   =        301
                                                LR chi2(30)     =      53.22
                                                Prob > chi2     =     0.0056
Log likelihood = -291.20999                     Pseudo R2       =     0.0837

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.007911    .023365     0.34   0.734     .9631411    1.054762
       exper |   .9486909   .0278313    -1.80   0.073     .8956812    1.004838
     charter |  (omitted)
pyperstudlep |    1.02075    .042852     0.49   0.625     .9401239     1.10829
pyperstude~s |   .9753335   .0149931    -1.62   0.104     .9463859    1.005167
pyperstudw~e |   .9875219   .0461261    -0.27   0.788     .9011312    1.082195
pyperstudb~k |   1.001177   .0475515     0.02   0.980     .9121841    1.098852
pyperstudl~o |   1.016224   .0493372     0.33   0.740     .9239835    1.117674
pyperstudm~e |   .9924341   .0201879    -0.37   0.709      .953645    1.032801
        male |   1.689253   .6352127     1.39   0.163     .8083811     3.52999
         age |   1.032089   .0305827     1.07   0.286     .9738557    1.093805
       Asian |  (omitted)
       Black |   7.871441    7.46647     2.18   0.030     1.226438    50.51997
      Latino |   5.152935   3.570914     2.37   0.018     1.324901    20.04129
       Other |   .5551949   2086.926    -0.00   1.000           0           .
   AsianMale |  (omitted)
   BlackMale |   4.58e-08   .0000963    -0.01   0.994           0           .
  LatinoMale |   .0669688   .0731488    -2.48   0.013     .0078726     .569672
   OtherMale |  (omitted)
-------------+-----------------------------------------------------------------
3            |
      tenure |   .9868449    .018087    -0.72   0.470     .9520241    1.022939
       exper |   1.012942   .0270884     0.48   0.631     .9612168     1.06745
     charter |  (omitted)
pyperstudlep |    1.05569   .0376954     1.52   0.129     .9843345    1.132219
pyperstude~s |   1.018835   .0127326     1.49   0.135     .9941827    1.044099
pyperstudw~e |   1.095072   .0515616     1.93   0.054      .998536    1.200941
pyperstudb~k |   1.069359   .0508952     1.41   0.159     .9741174    1.173912
pyperstudl~o |   1.069109    .051605     1.38   0.166     .9726024    1.175192
pyperstudm~e |   1.020543   .0158193     1.31   0.190     .9900036    1.052024
        male |    2.24367   .7197469     2.52   0.012     1.196471     4.20742
         age |   1.033117   .0281418     1.20   0.232     .9794064    1.089773
```

```
       Asian |  (omitted)
       Black |   3.071093   2.874349     1.20   0.231     .4904809    19.22932
      Latino |   3.349012   2.327053     1.74   0.082     .8579488    13.07291
       Other |    8484786   1.81e+10     0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   .3130992   .5408453    -0.67   0.501     .0106004    9.247862
  LatinoMale |   .2767808   .2519673    -1.41   0.158     .0464777    1.648265
   OtherMale |  (omitted)
-------------------------------------------------------------------------------


---------->  region = 4

Iteration 0:   log likelihood = -4824.1353
Iteration 1:   log likelihood = -4553.2917
Iteration 2:   log likelihood = -4544.4925
Iteration 3:   log likelihood = -4544.3143
Iteration 4:   log likelihood = -4544.2737
Iteration 5:   log likelihood = -4544.2647
Iteration 6:   log likelihood = -4544.2627
Iteration 7:   log likelihood = -4544.2624
Iteration 8:   log likelihood = -4544.2623
Iteration 9:   log likelihood = -4544.2623

Multinomial logistic regression                 Number of obs   =       4649
                                                LR chi2(38)     =     559.75
                                                Prob > chi2     =     0.0000
Log likelihood = -4544.2623                     Pseudo R2       =     0.0580

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.015153   .0053457     2.86   0.004      1.00473    1.025685
       exper |   1.026374   .0074463     3.59   0.000     1.011882    1.041072
     charter |   .2805462   .3027971    -1.18   0.239     .0338292    2.326575
pyperstudlep |   1.003864   .0036677     1.06   0.291     .9967012    1.011079
pyperstude~s |    .991596   .0030775    -2.72   0.007     .9855824    .9976462
pyperstudw~e |   .9939282   .0063394    -0.95   0.340     .9815806    1.006431
pyperstudb~k |   1.001588   .0073945     0.21   0.830     .9871996    1.016187
pyperstudl~o |   1.001152    .007195     0.16   0.873     .9871485    1.015353
pyperstudm~e |   1.002342   .0035024     0.67   0.503     .9955007     1.00923
        male |    1.11265   .1016532     1.17   0.243     .9302326    1.330839
         age |   .9472423   .0058647    -8.75   0.000     .9358173    .9588069
       Asian |   .5936164   .3236369    -0.96   0.339     .2039082    1.728132
       Black |   .8170995   .0914521    -1.80   0.071     .6561544    1.017522
      Latino |   1.108602   .1666785     0.69   0.493      .825653    1.488518
       Other |   .3472256    .195579    -1.88   0.060     .1151231    1.047276
   AsianMale |   2.971438   2.691268     1.20   0.229     .5035273    17.53518
   BlackMale |   1.749513   .3023585     3.24   0.001     1.246835    2.454854
  LatinoMale |   1.541168   .3829149     1.74   0.082     .9470273    2.508057
   OtherMale |   1.656597   1.662229     0.50   0.615     .2318044    11.83892
-------------+-----------------------------------------------------------------
3            |
      tenure |   1.034713   .0060253     5.86   0.000      1.02297     1.04659
       exper |    1.06797   .0094806     7.41   0.000     1.049549    1.086714
     charter |   6.037089   3.743752     2.90   0.004     1.790507    20.35538
pyperstudlep |   1.021877    .004317     5.12   0.000     1.013451    1.030374
pyperstude~s |   1.022617    .003928     5.82   0.000     1.014947    1.030345
pyperstudw~e |   1.003906   .0080684     0.49   0.628     .9882166    1.019845
pyperstudb~k |   .9879707   .0094201    -1.27   0.204      .969679    1.006607
pyperstudl~o |   .9742429   .0088914    -2.86   0.004     .9569711    .9918265
pyperstudm~e |   1.002795   .0041379     0.68   0.499     .9947173    1.010938
        male |   1.081564   .1157077     0.73   0.464     .8769786    1.333875
         age |   .9631065   .0075134    -4.82   0.000     .9484926    .9779456
```

```
       Asian |   .3235551   .2609113    -1.40   0.162     .0666114    1.571621
       Black |   .4856879   .0688059    -5.10   0.000     .3679343    .6411274
      Latino |   1.122081   .1913503     0.68   0.499     .8032806    1.567404
       Other |   .3678253   .2475455    -1.49   0.137     .0983524    1.375619
   AsianMale |   1.97e-06   .0015486    -0.02   0.987            0           .
   BlackMale |   1.848109    .404869     2.80   0.005     1.202966     2.83924
  LatinoMale |    1.11618   .3431459     0.36   0.721     .6110128    2.039004
   OtherMale |   3.068326   3.312673     1.04   0.299      .369755    25.46179
-------------------------------------------------------------------------------


---------->  region = 5

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -578.25385
Iteration 1:   log likelihood = -521.20706
Iteration 2:   log likelihood = -519.19088
Iteration 3:   log likelihood = -519.06932
Iteration 4:   log likelihood = -519.03988
Iteration 5:   log likelihood = -519.03427
Iteration 6:   log likelihood = -519.03336
Iteration 7:   log likelihood = -519.03313
Iteration 8:   log likelihood = -519.03309
Iteration 9:   log likelihood = -519.03308

Multinomial logistic regression                 Number of obs   =        574
                                                LR chi2(36)     =     118.44
                                                Prob > chi2     =     0.0000
Log likelihood = -519.03308                     Pseudo R2       =     0.1024

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.017395   .0175338     1.00   0.317     .9836031    1.052347
       exper |   .9508025   .0221245    -2.17   0.030     .9084132    .9951698
     charter |   1.772471   6219.558     0.00   1.000            0           .
pyperstudlep |   .9963293   .0485021    -0.08   0.940     .9056612    1.096074
pyperstude~s |   1.008172   .0090308     0.91   0.364     .9906265    1.026028
pyperstudw~e |   .9767537   .0485476    -0.47   0.636     .8860899    1.076694
pyperstudb~k |   .9671122   .0490318    -0.66   0.510     .8756321     1.06815
pyperstudl~o |   .9553079   .0606415    -0.72   0.471     .8435491    1.081873
pyperstudm~e |   .9959715    .014375    -0.28   0.780     .9681918    1.024548
        male |   2.591757   .7271453     3.39   0.001      1.49548    4.491672
         age |   1.010233   .0188459     0.55   0.585     .9739631    1.047854
       Asian |   7.64e-07   .0015275    -0.01   0.994            0           .
       Black |   2.471838   .9366588     2.39   0.017     1.176176    5.194785
      Latino |    7360201   7.81e+09     0.01   0.988            0           .
       Other |   9.64e-07   .0019273    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   .9140075    .456204    -0.18   0.857     .3436321    2.431116
  LatinoMale |   3.24e-07   .0003437    -0.01   0.989            0           .
   OtherMale |   1.74e+13   7.21e+16     0.01   0.994            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |    1.00301   .0143029     0.21   0.833     .9753647    1.031438
       exper |   1.064794   .0269336     2.48   0.013     1.013293    1.118914
     charter |   1.14e+07   2.12e+10     0.01   0.993            0           .
pyperstudlep |   1.030045   .0422461     0.72   0.470      .950485    1.116265
pyperstude~s |    1.03795   .0094007     4.11   0.000     1.019687    1.056539
pyperstudw~e |   .9835536   .0415779    -0.39   0.695      .905347    1.068516
pyperstudb~k |   .9518309   .0412666    -1.14   0.255     .8742909    1.036248
pyperstudl~o |   .9376036   .0505961    -1.19   0.233     .8435012    1.042204
pyperstudm~e |   1.012257   .0130783     0.94   0.346     .9869463    1.038218
        male |   4.082864   1.094664     5.25   0.000     2.414058    6.905292
```

```
         age |   .9758876   .0222511    -1.07   0.284     .9332364    1.020488
       Asian |   5.91e-07   .0010946    -0.01   0.994            0           .
       Black |   1.757374    .726581     1.36   0.173     .7815155    3.951764
      Latino |    6093563   6.47e+09     0.01   0.988            0           .
       Other |   3.49e-06   .0064645    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   .8409207   .4565059    -0.32   0.750     .2901804    2.436924
  LatinoMale |   2.08e-07   .0002203    -0.01   0.988            0           .
   OtherMale |     219309   1.48e+09     0.00   0.999            0           .
-------------------------------------------------------------------------------


---------->  region = 6

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -759.36333
Iteration 1:   log likelihood = -705.24512
Iteration 2:   log likelihood = -703.36105
Iteration 3:   log likelihood = -703.17871
Iteration 4:   log likelihood = -703.13813
Iteration 5:   log likelihood = -703.12928
Iteration 6:   log likelihood = -703.12748
Iteration 7:   log likelihood = -703.12707
Iteration 8:   log likelihood = -703.12697
Iteration 9:   log likelihood = -703.12695

Multinomial logistic regression                 Number of obs   =        698
                                                LR chi2(36)     =     112.47
                                                Prob > chi2     =     0.0000
Log likelihood = -703.12695                     Pseudo R2       =     0.0741

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   .9606889   .0133961    -2.88   0.004     .9347885    .9873068
       exper |   .9823901    .017755    -0.98   0.326        .9482    1.017813
     charter |   1.315692   2514.555     0.00   1.000            0           .
pyperstudlep |   1.018687    .017736     1.06   0.288     .9845115    1.054049
pyperstude~s |   1.003557   .0080084     0.45   0.656     .9879834    1.019377
pyperstudw~e |   .9647706   .0419732    -0.82   0.410     .8859145    1.050646
pyperstudb~k |   .9611143    .043369    -0.88   0.379      .879763    1.049988
pyperstudl~o |   .9645266   .0421804    -0.83   0.409     .8852986    1.050845
pyperstudm~e |   .9682024   .0142592    -2.19   0.028     .9406543    .9965572
        male |   1.172888   .2398994     0.78   0.436     .7855142    1.751294
         age |   .9845521   .0153803    -1.00   0.319      .954864    1.015163
       Asian |   4.36e-07   .0004877    -0.01   0.990            0           .
       Black |    1.13592   .6273952     0.23   0.818     .3847773    3.353407
      Latino |    .448388   .3451179    -1.04   0.297     .0991965    2.026804
       Other |   2.525999   3.643583     0.64   0.521      .149497    42.68093
   AsianMale |  (omitted)
   BlackMale |   4.219382   3.817963     1.59   0.112     .7161895     24.8582
  LatinoMale |   13.70384   18.66936     1.92   0.055     .9488806    197.9123
   OtherMale |   221733.8   1.72e+08     0.02   0.987            0           .
-------------+-----------------------------------------------------------------
3            |
      tenure |   .9745614   .0123981    -2.03   0.043     .9505621    .9991666
       exper |   1.057332   .0219686     2.68   0.007     1.015139    1.101278
     charter |    5497856   8.96e+09     0.01   0.992            0           .
pyperstudlep |   1.021883   .0180778     1.22   0.221     .9870586    1.057937
pyperstude~s |   1.024434   .0078674     3.14   0.002      1.00913    1.039971
pyperstudw~e |   .9535158   .0405858    -1.12   0.263     .8771968    1.036475
pyperstudb~k |    .938794   .0410629    -1.44   0.149     .8616656    1.022826
pyperstudl~o |   .9337156   .0397427    -1.61   0.107     .8589819    1.014951
pyperstudm~e |   1.007081   .0077902     0.91   0.362     .9919276    1.022466
```

```
        male |    1.82674   .3838644     2.87   0.004     1.210064    2.757688
         age |   .9747921   .0182658    -1.36   0.173     .9396411    1.011258
       Asian |   9.10e-07   .0011963    -0.01   0.992            0           .
       Black |   1.215745   .6928082     0.34   0.732        .3979     3.71459
      Latino |   1.080854   .8471505     0.10   0.921     .2326022    5.022509
       Other |   1.536671   2.323904     0.28   0.776     .0793068    29.77497
   AsianMale |  (omitted)
   BlackMale |   1.869948   1.725591     0.68   0.498     .3064357    11.41089
  LatinoMale |   2.519996   3.690188     0.63   0.528      .142867    44.44959
   OtherMale |   753127.5   5.86e+08     0.02   0.986            0           .
-------------------------------------------------------------------------------


---------->  region = 7

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1023.0313
Iteration 1:   log likelihood =  -965.2145
Iteration 2:   log likelihood = -962.55333
Iteration 3:   log likelihood = -962.29178
Iteration 4:   log likelihood = -962.24501
Iteration 5:   log likelihood = -962.23473
Iteration 6:   log likelihood = -962.23227
Iteration 7:   log likelihood = -962.23174
Iteration 8:   log likelihood = -962.23163
Iteration 9:   log likelihood =  -962.2316

Multinomial logistic regression                 Number of obs   =       1005
                                                LR chi2(36)     =     121.60
                                                Prob > chi2     =     0.0000
Log likelihood =  -962.2316                     Pseudo R2       =     0.0594

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   .9890184   .0129025    -0.85   0.397     .9640505    1.014633
       exper |   .9985414     .01739    -0.08   0.933     .9650328    1.033214
     charter |   1.29e-06   .0007482    -0.02   0.981            0           .
pyperstudlep |   .9508461   .0233464    -2.05   0.040     .9061716     .997723
pyperstude~s |   .9886475    .007773    -1.45   0.146     .9735295       1.004
pyperstudw~e |   .8804174   .0948485    -1.18   0.237     .7128326    1.087401
pyperstudb~k |     .88602   .0961465    -1.12   0.265     .7162676    1.096003
pyperstudl~o |   .9324676   .1028878    -0.63   0.526      .751126     1.15759
pyperstudm~e |   .9930571    .008059    -0.86   0.391     .9773867    1.008979
        male |   1.289688   .2693694     1.22   0.223      .856445    1.942093
         age |   .9698492   .0152684    -1.94   0.052     .9403806    1.000241
       Asian |   2.01e-06   .0021461    -0.01   0.990            0           .
       Black |   1.434248   .4886877     1.06   0.290     .7355233    2.796739
      Latino |   .3978014   .4348212    -0.84   0.399     .0466929    3.389078
       Other |   1.43e-06   .0011676    -0.02   0.987            0           .
   AsianMale |  (omitted)
   BlackMale |   2.093685    1.03114     1.50   0.134     .7974336    5.497032
  LatinoMale |   2.157978   3.041685     0.55   0.585       .13623    34.18388
   OtherMale |    2.47327   2805.666     0.00   0.999            0           .
-------------+-----------------------------------------------------------------
3            |
      tenure |     .99359   .0097214    -0.66   0.511     .9747179    1.012828
       exper |   1.020372   .0141035     1.46   0.145     .9931003    1.048392
     charter |   .2758271   .3063609    -1.16   0.246     .0312758    2.432571
pyperstudlep |   1.024197   .0212121     1.15   0.248      .983455    1.066628
pyperstude~s |   1.028424   .0060051     4.80   0.000     1.016721    1.040261
pyperstudw~e |   .9200101   .0898075    -0.85   0.393     .7598045    1.113995
pyperstudb~k |   .9055604   .0888589    -1.01   0.312     .7471238    1.097595
pyperstudl~o |   .8928764   .0890145    -1.14   0.256     .7343981    1.085553
```

```
pyperstudm~e |   1.000826   .0066182     0.12   0.901      .987938    1.013882
        male |   1.426383   .2357517     2.15   0.032     1.031692    1.972069
         age |   .9958835   .0127955    -0.32   0.748     .9711179    1.021281
       Asian |   1.646031   2.413933     0.34   0.734     .0929257    29.15682
       Black |   .9645636   .2991886    -0.12   0.907     .5251761    1.771564
      Latino |   .2010468   .2169993    -1.49   0.137     .0242413    1.667398
       Other |    1.09784   1.368503     0.07   0.940     .0953853    12.63562
   AsianMale |  (omitted)
   BlackMale |   1.716897   .8113531     1.14   0.253     .6799741     4.33507
  LatinoMale |    9.29263   12.08966     1.71   0.087     .7256547    119.0001
   OtherMale |   4.570436   7.889864     0.88   0.379     .1550755    134.7014
------------------------------------------------------------------------------


--------->  region = 8

note: charter omitted because of collinearity
note: AsianMale omitted because of collinearity
note: LatinoMale omitted because of collinearity
Iteration 0:   log likelihood = -330.94087
Iteration 1:   log likelihood = -290.11561
Iteration 2:   log likelihood = -287.47242
Iteration 3:   log likelihood = -287.13051
Iteration 4:   log likelihood = -287.08417
Iteration 5:   log likelihood = -287.07426
Iteration 6:   log likelihood = -287.07208
Iteration 7:   log likelihood = -287.07173
Iteration 8:   log likelihood = -287.07164
Iteration 9:   log likelihood = -287.07163

Multinomial logistic regression                 Number of obs   =        335
                                                LR chi2(32)     =      87.74
                                                Prob > chi2     =     0.0000
Log likelihood = -287.07163                     Pseudo R2       =     0.1326

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.013509   .0283677     0.48   0.632     .9594066    1.070662
       exper |   .9970408   .0387016    -0.08   0.939     .9240007    1.075855
     charter |  (omitted)
pyperstudlep |   .9595475   .0989092    -0.40   0.689      .784017    1.174377
pyperstude~s |   .9907468   .0178998    -0.51   0.607     .9562777    1.026458
pyperstudw~e |   .6075271    .178846    -1.69   0.090     .3411818    1.081796
pyperstudb~k |    .637772   .1852391    -1.55   0.121     .3609411    1.126924
pyperstudl~o |   .6044091   .1762739    -1.73   0.084     .3412565    1.070486
pyperstudm~e |   .9514355   .0373878    -1.27   0.205     .8809077     1.02761
        male |   2.799801   1.248509     2.31   0.021     1.168296    6.709675
         age |   .9616631   .0344948    -1.09   0.276     .8963764    1.031705
       Asian |   6.65e+07   4.85e+11     0.00   0.998            0           .
       Black |   3.233288   2.540435     1.49   0.135      .693178    15.08148
      Latino |   18.70953   31.37899     1.75   0.081     .6989671    500.8057
       Other |   1.02e-06   .0010958    -0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   .7768115   .8529861    -0.23   0.818     .0902911    6.683232
  LatinoMale |  (omitted)
   OtherMale |   3.12e+12   5.00e+15     0.02   0.986            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.014271   .0180282     0.80   0.425     .9795448    1.050228
       exper |   .9947415   .0246011    -0.21   0.831     .9476742    1.044147
     charter |  (omitted)
pyperstudlep |   .9971352   .0392197    -0.07   0.942     .9231541    1.077045
pyperstude~s |   1.048405   .0118738     4.17   0.000     1.025389    1.071938
```

```
pyperstudw~e |   .9149961   .1676747    -0.48   0.628     .6389031    1.310399
pyperstudb~k |   .8951577   .1628275    -0.61   0.543     .6267113    1.278591
pyperstudl~o |   .8796607   .1616079    -0.70   0.485     .6136712    1.260941
pyperstudm~e |   .9974867   .0146848    -0.17   0.864     .9691164    1.026688
        male |    2.49946   .7266233     3.15   0.002     1.413811    4.418764
         age |   1.027925   .0245203     1.15   0.248     .9809726    1.077125
       Asian |   .5424714   5976.249    -0.00   1.000            0           .
       Black |   2.316375   1.390966     1.40   0.162     .7139512    7.515348
      Latino |   5.238779   6.566655     1.32   0.186     .4490288    61.12037
       Other |   1.82e-06   .0012244    -0.02   0.984            0           .
   AsianMale |  (omitted)
   BlackMale |   .6825717   .6330801    -0.41   0.681     .1108321    4.203695
  LatinoMale |  (omitted)
   OtherMale |    4.94e+11   6.75e+14     0.02   0.984            0           .
------------------------------------------------------------------------------


---------->  region = 9

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -227.55953
Iteration 1:   log likelihood = -205.97113
Iteration 2:   log likelihood =  -203.9793
Iteration 3:   log likelihood = -203.59109
Iteration 4:   log likelihood = -203.50623
Iteration 5:   log likelihood =   -203.487
Iteration 6:   log likelihood = -203.48325
Iteration 7:   log likelihood =  -203.4824
Iteration 8:   log likelihood = -203.48219
Iteration 9:   log likelihood = -203.48215
Iteration 10:  log likelihood = -203.48214

Multinomial logistic regression                 Number of obs   =        215
                                                LR chi2(32)     =      48.15
                                                Prob > chi2     =     0.0333
Log likelihood = -203.48214                     Pseudo R2       =     0.1058

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |   1.016852   .0223168     0.76   0.446     .9740392    1.061546
       exper |   .9930252   .0368375    -0.19   0.850     .9233872    1.067915
     charter |    7679384   2.04e+10     0.01   0.995            0           .
pyperstudlep |   .9203088   .0604052    -1.27   0.206     .8092157    1.046653
pyperstude~s |   .9832794   .0138024    -1.20   0.230      .956596    1.010707
pyperstudw~e |   .9738229   .1173112    -0.22   0.826     .7690248    1.233161
pyperstudb~k |   .9880317   .1315485    -0.09   0.928     .7610974     1.28263
pyperstudl~o |   .9885377   .1208463    -0.09   0.925     .7779218    1.256176
pyperstudm~e |   1.013977   .0174957     0.80   0.421     .9802591    1.048854
        male |   .7353045   .2538526    -0.89   0.373     .3737687    1.446544
         age |   1.001777   .0312735     0.06   0.955     .9423195    1.064986
       Asian |  (omitted)
       Black |   .3673396   .4812554    -0.76   0.445     .0281773    4.788898
      Latino |    3830823   5.79e+09     0.01   0.992            0           .
       Other |   4.61e-07   .0007607    -0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |    6872893   7.50e+09     0.01   0.988            0           .
  LatinoMale |   1.02e-13   2.37e-10    -0.01   0.990            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.014853   .0318364     0.47   0.638     .9543348     1.07921
       exper |   .9034995   .0412501    -2.22   0.026     .8261626     .988076
     charter |   5.025313   23326.24     0.00   1.000            0           .
```

```
pyperstudlep |   1.048137   .0730115     0.67   0.500     .9143758    1.201466
pyperstude~s |   .9856008   .0172996    -0.83   0.409     .9522708    1.020097
pyperstudw~e |   .7791515   .1071351    -1.81   0.070     .5950861     1.02015
pyperstudb~k |   .7918172   .1183134    -1.56   0.118      .590797    1.061235
pyperstudl~o |   .7844484    .109727    -1.74   0.083     .5963484    1.031879
pyperstudm~e |   1.025597   .0214768     1.21   0.227     .9843559    1.068567
        male |   1.316371    .588776     0.61   0.539     .5478478    3.162984
         age |   1.047664   .0360925     1.35   0.177     .9792591    1.120846
       Asian |  (omitted)
       Black |   3.390236   3.597576     1.15   0.250     .4236142    27.13247
      Latino |   1.30e+07   1.96e+10     0.01   0.991            0           .
       Other |   2.308224    3.40448     0.57   0.571     .1281773    41.56662
   AsianMale |  (omitted)
   BlackMale |   917089.1   1.00e+09     0.01   0.990            0           .
  LatinoMale |   1.84e-14   5.17e-11    -0.01   0.991            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |  (base outcome)
-------------------------------------------------------------------------------


---------->  region = 10

Iteration 0:   log likelihood = -3386.5994
Iteration 1:   log likelihood = -3194.3412
Iteration 2:   log likelihood = -3191.1267
Iteration 3:   log likelihood = -3191.1169
Iteration 4:   log likelihood = -3191.1169

Multinomial logistic regression                 Number of obs   =       3154
                                                LR chi2(38)     =     390.97
                                                Prob > chi2     =     0.0000
Log likelihood = -3191.1169                     Pseudo R2       =     0.0577

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.009316   .0066155     1.41   0.157     .9964327    1.022366
       exper |    1.00203   .0087145     0.23   0.816     .9850944    1.019256
     charter |   .2576752   .2888126    -1.21   0.226     .0286426    2.318106
pyperstudlep |    .999034   .0052096    -0.19   0.853     .9888754    1.009297
pyperstude~s |    .994755   .0035246    -1.48   0.138     .9878707    1.001687
pyperstudw~e |   .9836996   .0088591    -1.82   0.068     .9664884    1.001217
pyperstudb~k |   .9840772   .0092935    -1.70   0.089     .9660297    1.002462
pyperstudl~o |   .9895174   .0091232    -1.14   0.253     .9717969    1.007561
pyperstudm~e |   1.002023   .0042962     0.47   0.637     .9936383    1.010479
        male |   1.353777   .1476739     2.78   0.005      1.09319    1.676481
         age |   .9601299   .0070644    -5.53   0.000     .9463833    .9740762
       Asian |    2.19095   1.713147     1.00   0.316     .4732179    10.14387
       Black |   1.463497   .2257397     2.47   0.014     1.081674    1.980099
      Latino |   1.679941   .3365217     2.59   0.010     1.134445    2.487738
       Other |   .8940275   .4838378    -0.21   0.836      .309521     2.58233
   AsianMale |   .8672513   .8792982    -0.14   0.888     .1188829    6.326601
   BlackMale |   1.481303   .3427648     1.70   0.089     .9411975    2.331347
  LatinoMale |   1.154803   .3798548     0.44   0.662     .6060634     2.20038
   OtherMale |   1.191509   .8390203     0.25   0.803     .2997162    4.736795
-------------+----------------------------------------------------------------
3            |
      tenure |   1.022672   .0063168     3.63   0.000     1.010366    1.035128
       exper |   1.060526   .0102173     6.10   0.000     1.040688    1.080742
     charter |   2.587793   1.797906     1.37   0.171     .6630481    10.09983
pyperstudlep |   1.012983   .0059476     2.20   0.028     1.001393    1.024708
pyperstude~s |   1.015417   .0037024     4.20   0.000     1.008187      1.0227
pyperstudw~e |   1.017281   .0099654     1.75   0.080     .9979352    1.037001
```

```
pyperstudb~k |   .9951643   .0103817    -0.46   0.642     .9750232    1.015722
pyperstudl~o |   .9859538   .0099777    -1.40   0.162     .9665905    1.005705
pyperstudm~e |   1.005794   .0044224     1.31   0.189     .9971633    1.014499
        male |   1.154829     .13064     1.27   0.203     .9251788    1.441484
         age |   .9709623   .0083758    -3.42   0.001     .9546841    .9875181
       Asian |   2.337599   2.013986     0.99   0.324     .4319236    12.65124
       Black |   1.273401   .2195018     1.40   0.161     .9083219    1.785215
      Latino |   1.826596   .3935074     2.80   0.005     1.197475    2.786241
       Other |   .4573351   .3041482    -1.18   0.239     .1242074     1.68392
   AsianMale |   .6338964   .6923063    -0.42   0.676      .074539      5.3908
   BlackMale |   1.606168   .4158056     1.83   0.067     .9670116    2.667783
  LatinoMale |   2.123541   .7306498     2.19   0.029     1.081898    4.168068
   OtherMale |    1.00599   .9449579     0.01   0.995     .1596002    6.340944
------------------------------------------------------------------------------


---------->  region = 11

note: charter omitted because of collinearity
Iteration 0:   log likelihood = -2416.5808
Iteration 1:   log likelihood =  -2276.098
Iteration 2:   log likelihood = -2273.5677
Iteration 3:   log likelihood = -2273.5623
Iteration 4:   log likelihood = -2273.5623

Multinomial logistic regression                 Number of obs   =       2227
                                                LR chi2(36)     =     286.04
                                                Prob > chi2     =     0.0000
Log likelihood = -2273.5623                     Pseudo R2       =     0.0592

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9972247   .0077332    -0.36   0.720     .9821826    1.012497
       exper |   1.001799   .0095726     0.19   0.851     .9832113    1.020737
     charter |  (omitted)
pyperstudlep |   .9962656   .0073222    -0.51   0.611     .9820172    1.010721
pyperstude~s |   1.001281   .0038371     0.33   0.738     .9937883     1.00883
pyperstudw~e |    .965598   .0130178    -2.60   0.009     .9404177    .9914525
pyperstudb~k |   .9692344   .0140083    -2.16   0.031      .942164    .9970826
pyperstudl~o |   .9709442     .01334    -2.15   0.032     .9451473    .9974453
pyperstudm~e |   .9901108   .0042575    -2.31   0.021     .9818014    .9984905
        male |   1.121795   .1311625     0.98   0.326     .8920501     1.41071
         age |   .9768529   .0080559    -2.84   0.005     .9611905    .9927704
       Asian |    1.06193   .8229616     0.08   0.938     .2325103    4.850088
       Black |   1.587435   .3636921     2.02   0.044     1.013164    2.487207
      Latino |   2.508377   .8041199     2.87   0.004     1.338197    4.701817
       Other |   1.084003   .6465553     0.14   0.892     .3367675    3.489241
   AsianMale |   2.825848   3.966517     0.74   0.459     .1804493    44.25298
   BlackMale |   2.278457   .8446766     2.22   0.026     1.101744    4.711953
  LatinoMale |   .5881544   .2660401    -1.17   0.241     .2423634    1.427301
   OtherMale |   1.094166   .9954233     0.10   0.921     .1839492    6.508312
-------------+----------------------------------------------------------------
3            |
      tenure |   1.008547   .0073163     1.17   0.241     .9943093     1.02299
       exper |   1.066079   .0112792     6.05   0.000       1.0442    1.088417
     charter |  (omitted)
pyperstudlep |   1.013026   .0083618     1.57   0.117     .9967688    1.029548
pyperstude~s |   1.026011   .0042323     6.22   0.000     1.017749    1.034339
pyperstudw~e |   1.007903   .0155169     0.51   0.609     .9779449    1.038779
pyperstudb~k |   .9878938   .0163156    -0.74   0.461     .9564277    1.020395
pyperstudl~o |   .9752014   .0155591    -1.57   0.116      .945178    1.006179
pyperstudm~e |   .9983192   .0041143    -0.41   0.683     .9902878    1.006416
        male |    1.32442   .1613631     2.31   0.021     1.043081    1.681642
```

```
         age |   .9836805   .0095339    -1.70   0.090     .9651709    1.002545
       Asian |   .5744796   .6488897    -0.49   0.624     .0627799    5.256891
       Black |   1.671649   .4478986     1.92   0.055     .9887254    2.826275
      Latino |   3.342801   1.120505     3.60   0.000     1.732959    6.448115
       Other |   .5108185   .4155355    -0.83   0.409     .1037145    2.515901
   AsianMale |   5.647551   10.27539     0.95   0.341     .1596427    199.7888
   BlackMale |   1.460411   .6303771     0.88   0.380     .6266997    3.403226
  LatinoMale |   .5322453   .2614497    -1.28   0.199     .2032284    1.393925
   OtherMale |   1.960588   2.222153     0.59   0.553     .2126303    18.07789
------------------------------------------------------------------------------


---------->  region = 12

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -860.19296
Iteration 1:   log likelihood = -811.47069
Iteration 2:   log likelihood = -809.63197
Iteration 3:   log likelihood = -809.43003
Iteration 4:   log likelihood = -809.39146
Iteration 5:   log likelihood =  -809.3832
Iteration 6:   log likelihood = -809.38131
Iteration 7:   log likelihood = -809.38085
Iteration 8:   log likelihood = -809.38076
Iteration 9:   log likelihood = -809.38074

Multinomial logistic regression                 Number of obs   =        811
                                                LR chi2(34)     =     101.62
                                                Prob > chi2     =     0.0000
Log likelihood = -809.38074                     Pseudo R2       =     0.0591

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.012301   .0141197     0.88   0.381     .9850012    1.040356
       exper |   .9808282   .0178285    -1.06   0.287     .9465002    1.016401
     charter |   2.64e-07    .000727    -0.01   0.996            0           .
pyperstudlep |   1.038691   .0246307     1.60   0.109     .9915206    1.088106
pyperstude~s |   .9882414   .0073805    -1.58   0.113     .9738812    1.002813
pyperstudw~e |   .9206883   .0516608    -1.47   0.141     .8248041    1.027719
pyperstudb~k |   .9387769   .0565114    -1.05   0.294     .8343009    1.056336
pyperstudl~o |    .925482    .051974    -1.38   0.168     .8290209    1.033167
pyperstudm~e |    .997541   .0080906    -0.30   0.761      .981809    1.013525
        male |   .8349329   .1803927    -0.83   0.404     .5466935    1.275144
         age |   .9749011   .0152406    -1.63   0.104     .9454831    1.005234
       Asian |  (omitted)
       Black |   .8808103    .305062    -0.37   0.714     .4467608    1.736559
      Latino |   2.755144   1.784467     1.56   0.118     .7741644    9.805176
       Other |   .2325132   .2736038    -1.24   0.215     .0231643     2.33387
   AsianMale |  (omitted)
   BlackMale |    2.08889   1.367403     1.13   0.260     .5790458    7.535608
  LatinoMale |   .6842577   .6191215    -0.42   0.675     .1161572    4.030818
   OtherMale |   9.534445   17.93352     1.20   0.231     .2389207    380.4845
-------------+----------------------------------------------------------------
3            |
      tenure |   .9980656   .0109769    -0.18   0.860     .9767815    1.019814
       exper |   1.043903   .0170101     2.64   0.008     1.011091    1.077781
     charter |   5.70e-07   .0013611    -0.01   0.995            0           .
pyperstudlep |   1.059202   .0231763     2.63   0.009     1.014737    1.105615
pyperstude~s |   1.009797   .0068522     1.44   0.151     .9964555    1.023317
pyperstudw~e |   1.065302   .0619968     1.09   0.277     .9504641    1.194014
pyperstudb~k |   1.055136     .06494     0.87   0.383     .9352336    1.190412
pyperstudl~o |   1.032917    .060462     0.55   0.580     .9209588    1.158486
```

```
pyperstudm~e |   1.003259   .0077848     0.42   0.675     .9881161    1.018633
        male |   1.128078    .212375     0.64   0.522      .779991    1.631506
         age |   .9837731   .0147222    -1.09   0.274     .9553371    1.013055
       Asian |  (omitted)
       Black |   1.092668   .3824732     0.25   0.800     .5502208    2.169899
      Latino |   1.162861    .918287     0.19   0.848     .2473727    5.466431
       Other |   8.53e-07   .0007786    -0.02   0.988            0           .
   AsianMale |  (omitted)
   BlackMale |   2.165457   1.309568     1.28   0.201     .6618852     7.08462
  LatinoMale |   .7073356    .821289    -0.30   0.766     .0726597    6.885851
   OtherMale |   1.085643   1897.392     0.00   1.000            0           .
------------------------------------------------------------------------------


--------->  region = 13

Iteration 0:   log likelihood = -1423.2109
Iteration 1:   log likelihood = -1353.8044
Iteration 2:   log likelihood = -1352.5434
Iteration 3:   log likelihood = -1352.3325
Iteration 4:   log likelihood = -1352.2984
Iteration 5:   log likelihood = -1352.2948
Iteration 6:   log likelihood = -1352.2941
Iteration 7:   log likelihood = -1352.2939
Iteration 8:   log likelihood = -1352.2939
Iteration 9:   log likelihood = -1352.2939

Multinomial logistic regression                 Number of obs   =       1315
                                                LR chi2(38)     =     141.83
                                                Prob > chi2     =     0.0000
Log likelihood = -1352.2939                     Pseudo R2       =     0.0498

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.029126   .0112325     2.63   0.009     1.007345    1.051379
       exper |   .9490886   .0119158    -4.16   0.000      .926019    .9727328
     charter |    2.31321   10871.57     0.00   1.000            0           .
pyperstudlep |   .9923241   .0097641    -0.78   0.434     .9733701    1.011647
pyperstude~s |   1.002178   .0072647     0.30   0.764      .98804    1.016518
pyperstudw~e |   .9479712    .023874    -2.12   0.034     .9023151    .9959374
pyperstudb~k |    .950402   .0269767    -1.79   0.073     .8989726    1.004774
pyperstudl~o |   .9521384   .0245905    -1.90   0.058     .9051415    1.001576
pyperstudm~e |   .9913002   .0064028    -1.35   0.176     .9788301    1.003929
        male |   .8777356   .1457738    -0.79   0.432     .6338649    1.215432
         age |   .9953219   .0108759    -0.43   0.668     .9742323    1.016868
       Asian |   .7309693   .9090815    -0.25   0.801     .0638688    8.365837
       Black |   1.256893   .4028444     0.71   0.476     .6706277    2.355675
      Latino |   1.174137   .2891424     0.65   0.514     .7246065    1.902546
       Other |   3.368367   4.226814     0.97   0.333     .2879282    39.40529
   AsianMale |   1.86e+07   5.40e+10     0.01   0.995            0           .
   BlackMale |   2.274906   1.213977     1.54   0.123     .7993366    6.474364
  LatinoMale |   1.891802    .744469     1.62   0.105     .8747975    4.091134
   OtherMale |   .3409501   .5038139    -0.73   0.467     .0188317     6.17293
-------------+----------------------------------------------------------------
3            |
      tenure |   1.029758   .0102248     2.95   0.003     1.009911    1.049994
       exper |   .9953409   .0125542    -0.37   0.711     .9710368    1.020253
     charter |   1.36e+07   4.10e+10     0.01   0.996            0           .
pyperstudlep |    .998331   .0094805    -0.18   0.860     .9799215    1.017086
pyperstude~s |   1.033001   .0071853     4.67   0.000     1.019014     1.04718
pyperstudw~e |   .9516817    .024994    -1.89   0.059     .9039339    1.001952
pyperstudb~k |   .9168061   .0273519    -2.91   0.004     .8647347    .9720131
pyperstudl~o |   .9337257   .0251636    -2.54   0.011     .8856858    .9843713
```

```
pyperstudm~e |    .998268   .0060373    -0.29   0.774     .9865049    1.010171
        male |   1.040775   .1662993     0.25   0.802     .7609369    1.423526
         age |   1.001175   .0114789     0.10   0.918     .9789276    1.023928
       Asian |   1.173373   1.457569     0.13   0.898     .1028182    13.39067
       Black |   .5339102   .2180624    -1.54   0.124     .2397817    1.188832
      Latino |   .8297409   .2188285    -0.71   0.479      .494828    1.391332
       Other |   2.114278   2.681356     0.59   0.555     .1760583    25.39028
   AsianMale |   1.843573   8404.293     0.00   1.000            0           .
   BlackMale |   4.643549   2.835084     2.51   0.012     1.403315    15.36543
  LatinoMale |   2.002313   .8276323     1.68   0.093      .890631    4.501591
   OtherMale |   3.90e-07   .0003054    -0.02   0.985            0           .
------------------------------------------------------------------------------


--------->  region = 14

note: charter omitted because of collinearity
note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -274.60202
Iteration 1:   log likelihood =  -239.8176
Iteration 2:   log likelihood =  -235.6764
Iteration 3:   log likelihood = -234.99504
Iteration 4:   log likelihood = -234.94115
Iteration 5:   log likelihood = -234.92991
Iteration 6:   log likelihood = -234.92736
Iteration 7:   log likelihood = -234.92673
Iteration 8:   log likelihood =  -234.9266
Iteration 9:   log likelihood = -234.92658

Multinomial logistic regression                 Number of obs   =        285
                                                LR chi2(30)     =      79.35
                                                Prob > chi2     =     0.0000
Log likelihood = -234.92658                     Pseudo R2       =     0.1445

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.000687   .0341147     0.02   0.984     .9360088    1.069835
       exper |   .9400442   .0392259    -1.48   0.138     .8662227    1.020157
     charter |  (omitted)
pyperstudlep |   .7874025   .1463387    -1.29   0.198     .5470173    1.133424
pyperstude~s |   .9773142   .0176163    -1.27   0.203     .9433896    1.012459
pyperstudw~e |   .8813598   .2467259    -0.45   0.652     .5091782    1.525586
pyperstudb~k |   .9398044   .2903042    -0.20   0.841     .5129825    1.721759
pyperstudl~o |    .894977   .2438941    -0.41   0.684     .5246228     1.52678
pyperstudm~e |   .9931761   .0273604    -0.25   0.804     .9409726    1.048276
        male |   1.926957   .9337848     1.35   0.176     .7453977    4.981454
         age |   1.064338   .0401544     1.65   0.098     .9884765    1.146022
       Asian |  (omitted)
       Black |   4.09e-06   .0029939    -0.02   0.986            0           .
      Latino |   3.904437   5.267705     1.01   0.313     .2774293    54.94959
       Other |   2.23e-06   .0042806    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   303766.5   5.13e+08     0.01   0.994            0           .
  LatinoMale |   .7746799   1.191005    -0.17   0.868     .0380603    15.76784
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.010063   .0205707     0.49   0.623     .9705392    1.051196
       exper |   1.038119   .0302462     1.28   0.199     .9804982    1.099125
     charter |  (omitted)
pyperstudlep |   1.037683   .0446003     0.86   0.389     .9538486    1.128885
```

```
pyperstude~s |   1.037886   .0113729     3.39   0.001     1.015833    1.060418
pyperstudw~e |   1.418688   .2595101     1.91   0.056     .9912495    2.030444
pyperstudb~k |    1.35431   .2670713     1.54   0.124     .9201535    1.993315
pyperstudl~o |   1.393268   .2508921     1.84   0.066     .9789378    1.982962
pyperstudm~e |   .9957021   .0168807    -0.25   0.799     .9631601    1.029344
        male |   2.443693   .7373341     2.96   0.003     1.352739    4.414477
         age |   .9914219   .0262335    -0.33   0.745     .9413157    1.044195
       Asian |  (omitted)
       Black |   3.176156   3.462244     1.06   0.289     .3749984    26.90136
      Latino |   1.392632   1.426963     0.32   0.747     .1869177    10.37581
       Other |   9.50e-07   .0009594    -0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |   202361.9   1.47e+08     0.02   0.987            0           .
  LatinoMale |   .4738362   .6546807    -0.54   0.589     .0315905    7.107218
   OtherMale |  (omitted)
-------------------------------------------------------------------------------


--------->  region = 15

note: charter omitted because of collinearity
note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -284.28468
Iteration 1:   log likelihood = -251.01136
Iteration 2:   log likelihood = -246.54867
Iteration 3:   log likelihood = -246.36963
Iteration 4:   log likelihood = -246.34192
Iteration 5:   log likelihood =  -246.3375
Iteration 6:   log likelihood = -246.33643
Iteration 7:   log likelihood = -246.33621
Iteration 8:   log likelihood = -246.33616
Iteration 9:   log likelihood = -246.33615

Multinomial logistic regression                 Number of obs   =        289
                                                LR chi2(30)     =      75.90
                                                Prob > chi2     =     0.0000
Log likelihood = -246.33615                     Pseudo R2       =     0.1335

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   .9544413    .024866    -1.79   0.073     .9069282    1.004444
       exper |   .9765627   .0412867    -0.56   0.575     .8989041     1.06093
     charter |  (omitted)
pyperstudlep |   1.052845    .032421     1.67   0.094      .991181    1.118346
pyperstude~s |   .9751501   .0160356    -1.53   0.126      .944222    1.007091
pyperstudw~e |   .7443762   .2461221    -0.89   0.372     .3893583      1.4231
pyperstudb~k |   .8747924    .308837    -0.38   0.705     .4379218    1.747485
pyperstudl~o |   .7598737    .249751    -0.84   0.403     .3990004    1.447137
pyperstudm~e |   .9708088     .02627    -1.09   0.274      .920662    1.023687
        male |   4.429719   2.635105     2.50   0.012     1.380455    14.21445
         age |   1.083727   .0458323     1.90   0.057     .9975191    1.177384
       Asian |  (omitted)
       Black |   3.02e-06   .0072687    -0.01   0.996            0           .
      Latino |   15.22664   11.38327     3.64   0.000     3.517669    65.91029
       Other |   2.788557   8884.695     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   663824.3   2.65e+09     0.00   0.997            0           .
  LatinoMale |   .1228545   .1112694    -2.32   0.021     .0208189    .7249782
   OtherMale |  (omitted)
-------------+-----------------------------------------------------------------
3            |
```

```
      tenure |   .9417605   .0171891    -3.29   0.001     .9086661    .9760603
       exper |   1.048841   .0304205     1.64   0.100     .9908812    1.110192
     charter |  (omitted)
pyperstudlep |   1.043712   .0265764     1.68   0.093     .9929016    1.097122
pyperstude~s |   1.023585   .0104199     2.29   0.022     1.003365    1.044213
pyperstudw~e |   1.153592   .2452536     0.67   0.502     .7604786    1.749918
pyperstudb~k |    1.24674   .2877375     0.96   0.339     .7930958    1.959866
pyperstudl~o |   1.129782   .2393673     0.58   0.565     .7458476    1.711351
pyperstudm~e |   .9785344   .0155803    -1.36   0.173     .9484692    1.009553
        male |   1.534186   .4828751     1.36   0.174     .8278807    2.843074
         age |   1.001353   .0281214     0.05   0.962     .9477258    1.058015
       Asian |  (omitted)
       Black |   4.50e-06   .0064042    -0.01   0.993           0           .
      Latino |   1.140762   .7448942     0.20   0.840     .3172324    4.102157
       Other |    5032678   7.37e+09     0.01   0.992           0           .
   AsianMale |  (omitted)
   BlackMale |   8.62e+11   1.76e+15     0.01   0.989           0           .
  LatinoMale |   1.013851   .8248292     0.02   0.987     .2058118     4.99434
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 16

note: charter omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -477.06084
Iteration 1:   log likelihood = -431.73602
Iteration 2:   log likelihood = -429.11879
Iteration 3:   log likelihood = -428.85606
Iteration 4:   log likelihood = -428.79852
Iteration 5:   log likelihood = -428.78586
Iteration 6:   log likelihood =  -428.7833
Iteration 7:   log likelihood = -428.78273
Iteration 8:   log likelihood = -428.78259
Iteration 9:   log likelihood = -428.78256

Multinomial logistic regression                 Number of obs   =        452
                                                LR chi2(34)     =      96.56
                                                Prob > chi2     =     0.0000
Log likelihood = -428.78256                     Pseudo R2       =     0.1012

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.060916   .0248174     2.53   0.011     1.013373     1.11069
       exper |   .9247333   .0275867    -2.62   0.009     .8722148    .9804141
     charter |  (omitted)
pyperstudlep |   .9952976   .0236822    -0.20   0.843      .949947    1.042813
pyperstude~s |   .9740752   .0099212    -2.58   0.010     .9548227    .9937158
pyperstudw~e |   .9118385   .0462655    -1.82   0.069     .8255227    1.007179
pyperstudb~k |   .9511064    .054353    -0.88   0.380     .8503259    1.063831
pyperstudl~o |   .9291471   .0478491    -1.43   0.154     .8399422    1.027826
pyperstudm~e |   1.036474   .0153907     2.41   0.016     1.006744    1.067083
        male |   2.091589   .6446202     2.39   0.017     1.143244    3.826604
         age |   1.003753   .0251959     0.15   0.881     .9555653    1.054371
       Asian |    9346995   2.67e+10     0.01   0.996           0           .
       Black |   .2599164    .335061    -1.05   0.296      .020775     3.25182
      Latino |   12.40364   9.466223     3.30   0.001     2.779254    55.35668
       Other |   1.617405   2.505793     0.31   0.756      .077639    33.69439
   AsianMale |  (omitted)
   BlackMale |   7.56e-07   .0005773    -0.02   0.985           0           .
  LatinoMale |   .1723272   .2184502    -1.39   0.165     .0143658    2.067175
   OtherMale |    1190235   1.01e+09     0.02   0.987           0           .
```

```
-------------+----------------------------------------------------------------
3            |
      tenure |   1.026204   .0158397     1.68   0.094      .995624    1.057724
       exper |    1.02238   .0238007     0.95   0.342       .97678     1.07011
     charter |  (omitted)
pyperstudlep |   1.037057   .0185508     2.03   0.042     1.001328    1.074061
pyperstude~s |    1.00144   .0075344     0.19   0.848      .986781    1.016316
pyperstudw~e |   .9592939   .0429441    -0.93   0.353     .8787118    1.047266
pyperstudb~k |   .9602986   .0476187    -0.82   0.414     .8713595    1.058316
pyperstudl~o |   .9510476   .0425805    -1.12   0.262     .8711482    1.038275
pyperstudm~e |   1.016864   .0143703     1.18   0.237     .9890855    1.045423
        male |   1.628759   .3874254     2.05   0.040     1.021846    2.596141
         age |   1.000871   .0217274     0.04   0.968     .9591789    1.044374
       Asian |    1.41273   5993.725     0.00   1.000            0           .
       Black |   6.73e-07   .0003911    -0.02   0.980            0           .
      Latino |   1.412578   1.269985     0.38   0.701     .2425135      8.2279
       Other |   .5452957   .6940719    -0.48   0.634     .0449979    6.608028
   AsianMale |  (omitted)
   BlackMale |   231793.1   1.35e+08     0.02   0.983            0           .
  LatinoMale |    1.26453   1.643266     0.18   0.857     .0990345    16.14626
   OtherMale |   511040.4   4.36e+08     0.02   0.988            0           .
------------------------------------------------------------------------------


---------->  region = 17

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -451.15759
Iteration 1:   log likelihood = -406.08772
Iteration 2:   log likelihood = -403.87854
Iteration 3:   log likelihood = -403.22481
Iteration 4:   log likelihood = -403.15988
Iteration 5:   log likelihood = -403.14821
Iteration 6:   log likelihood = -403.14565
Iteration 7:   log likelihood = -403.14502
Iteration 8:   log likelihood = -403.14489
Iteration 9:   log likelihood = -403.14486

Multinomial logistic regression                 Number of obs   =        453
                                                LR chi2(34)     =      96.03
                                                Prob > chi2     =     0.0000
Log likelihood = -403.14486                     Pseudo R2       =     0.1064

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.00919   .0208042     0.44   0.657     .9692274      1.0508
       exper |   1.013815   .0315918     0.44   0.660     .9537489    1.077664
     charter |   1.571143   2723.354     0.00   1.000            0           .
pyperstudlep |   .9831877   .0547097    -0.30   0.761     .8815991    1.096483
pyperstude~s |   .9697208   .0133558    -2.23   0.026     .9438941    .9962541
pyperstudw~e |   .9375342   .1407604    -0.43   0.667     .6985357    1.258304
pyperstudb~k |   .9754431    .147232    -0.16   0.869     .7256426    1.311237
pyperstudl~o |   .9594959   .1435167    -0.28   0.782     .7156894    1.286358
pyperstudm~e |   .9930346    .011323    -0.61   0.540      .971088    1.015477
        male |   3.345473   1.177164     3.43   0.001     1.678599    6.667575
         age |   1.009737   .0295452     0.33   0.741     .9534588    1.069338
       Asian |   5.24e-06    .007077    -0.01   0.993            0           .
       Black |   2.754153   2.788212     1.00   0.317     .3786695    20.03161
      Latino |   1.299777   1.452969     0.23   0.815     .1453264      11.625
       Other |    2023933   1.36e+09     0.02   0.983            0           .
   AsianMale |  (omitted)
   BlackMale |    1414407   1.55e+09     0.01   0.990            0           .
```

```
  LatinoMale |   1.215204   1.608915     0.15   0.883     .0907128    16.27908
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |    1.01793   .0159121     1.14   0.256     .9872159      1.0496
       exper |   1.033256   .0244383     1.38   0.167     .9864508    1.082282
     charter |     626685   5.18e+08     0.02   0.987            0           .
pyperstudlep |   1.066198   .0295572     2.31   0.021     1.009813    1.125732
pyperstude~s |   1.010457   .0099839     1.05   0.292     .9910776    1.030216
pyperstudw~e |   1.071614   .1246919     0.59   0.552     .8530874    1.346119
pyperstudb~k |   1.062202   .1246493     0.51   0.607     .8439543     1.33689
pyperstudl~o |   1.069879    .124615     0.58   0.562     .8515111    1.344247
pyperstudm~e |   .9873103   .0095844    -1.32   0.188     .9687028    1.006275
        male |   2.800973   .6731242     4.29   0.000     1.748839     4.48609
         age |   .9844896   .0213121    -0.72   0.470     .9435924    1.027159
       Asian |   3.33e-06   .0026868    -0.02   0.988            0           .
       Black |   .4631514   .5704038    -0.62   0.532     .0414389    5.176523
      Latino |   2.237004   1.307959     1.38   0.169     .7111737     7.03652
       Other |   292941.6   1.96e+08     0.02   0.985            0           .
   AsianMale |  (omitted)
   BlackMale |    3690181   4.05e+09     0.01   0.989            0           .
  LatinoMale |   .5768986   .4654019    -0.68   0.495     .1186886    2.804078
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 18

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -426.48913
Iteration 1:   log likelihood = -397.11821
Iteration 2:   log likelihood = -396.04368
Iteration 3:   log likelihood = -395.89892
Iteration 4:   log likelihood = -395.86341
Iteration 5:   log likelihood = -395.85687
Iteration 6:   log likelihood = -395.85576
Iteration 7:   log likelihood =  -395.8555
Iteration 8:   log likelihood = -395.85544
Iteration 9:   log likelihood = -395.85542

Multinomial logistic regression                 Number of obs   =        403
                                                LR chi2(34)     =      61.27
                                                Prob > chi2     =     0.0028
Log likelihood = -395.85542                     Pseudo R2       =     0.0718

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.016153   .0222255     0.73   0.464     .9735129    1.060662
       exper |    .954085   .0256365    -1.75   0.080     .9051386    1.005678
     charter |   2.78e+07   5.20e+10     0.01   0.993            0           .
pyperstudlep |   1.019099   .0175268     1.10   0.271     .9853194    1.054036
pyperstude~s |   .9877108   .0128457    -0.95   0.342     .9628519    1.013212
pyperstudw~e |   .9786202   .0685902    -0.31   0.758      .853011    1.122726
pyperstudb~k |   1.015325    .077491     0.20   0.842     .8742589    1.179152
pyperstudl~o |   .9836018   .0683505    -0.24   0.812     .8583597    1.127118
pyperstudm~e |   1.012311   .0128785     0.96   0.336     .9873813    1.037869
        male |   1.771536   .5952653     1.70   0.089     .9169217    3.422691
         age |   .9860837   .0229751    -0.60   0.548      .942066    1.032158
       Asian |  (omitted)
       Black |   5.747627   7.331797     1.37   0.170     .4717127    70.03249
      Latino |   2.495924   1.193267     1.91   0.056     .9778757     6.37058
       Other |   2.234011   3.340798     0.54   0.591     .1191726    41.87879
```

```
   AsianMale |  (omitted)
   BlackMale |   .0816496   .1695476    -1.21   0.228     .0013945    4.780762
  LatinoMale |   .4544373   .2897369    -1.24   0.216      .130248    1.585539
   OtherMale |   2.91e-08   .0000877    -0.01   0.995            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.022248   .0170956     1.32   0.188     .9892849     1.05631
       exper |   1.054496   .0274917     2.04   0.042     1.001967    1.109779
     charter |    2744644   5.13e+09     0.01   0.994            0           .
pyperstudlep |   .9998148   .0145786    -0.01   0.990     .9716456    1.028801
pyperstude~s |   1.023989   .0112859     2.15   0.031     1.002106    1.046349
pyperstudw~e |   1.001802    .085391     0.02   0.983      .847672    1.183958
pyperstudb~k |   .9876234   .0892494    -0.14   0.890     .8273136    1.178997
pyperstudl~o |   .9964754   .0842176    -0.04   0.967     .8443585    1.175997
pyperstudm~e |   1.002247    .012075     0.19   0.852     .9788578    1.026196
        male |   1.773313   .4958275     2.05   0.040     1.025144    3.067508
         age |   .9367191   .0228808    -2.68   0.007     .8929302    .9826554
       Asian |  (omitted)
       Black |   4.927714   5.760879     1.36   0.172     .4983391    48.72658
      Latino |   1.198746   .5345701     0.41   0.684     .5001976     2.87285
       Other |   3.80e-07   .0008302    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   .4469593    .759656    -0.47   0.636     .0159793    12.50195
  LatinoMale |   .5274215   .3137461    -1.08   0.282     .1643635    1.692428
   OtherMale |    .486824   1484.397    -0.00   1.000            0           .
------------------------------------------------------------------------------


--------->  region = 19

Iteration 0:   log likelihood = -804.20395
Iteration 1:   log likelihood =  -731.3405
Iteration 2:   log likelihood = -729.05119
Iteration 3:   log likelihood = -728.94158
Iteration 4:   log likelihood = -728.92189
Iteration 5:   log likelihood = -728.91997
Iteration 6:   log likelihood = -728.91955
Iteration 7:   log likelihood = -728.91945
Iteration 8:   log likelihood = -728.91944

Multinomial logistic regression                 Number of obs   =        751
                                                LR chi2(38)     =     150.57
                                                Prob > chi2     =     0.0000
Log likelihood = -728.91944                     Pseudo R2       =     0.0936

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.02107   .0137872     1.54   0.123     .9944022    1.048453
       exper |   1.055271   .0200683     2.83   0.005     1.016662    1.095346
     charter |   1.45e-06   .0016193    -0.01   0.990            0           .
pyperstudlep |    1.01256   .0059783     2.11   0.035     1.000911    1.024346
pyperstude~s |   .9942363   .0089517    -0.64   0.521     .9768452    1.011937
pyperstudw~e |   1.004895   .1050154     0.05   0.963     .8187789    1.233316
pyperstudb~k |   1.073139   .1173365     0.65   0.519     .8661359    1.329615
pyperstudl~o |    1.00671   .0984166     0.07   0.945     .8311708    1.219322
pyperstudm~e |   1.000147   .0076794     0.02   0.985     .9852086    1.015312
        male |   1.702363   .4943198     1.83   0.067      .963577    3.007585
         age |   .9635152   .0153762    -2.33   0.020     .9338448    .9941283
       Asian |   .9081549   4401.819    -0.00   1.000            0           .
       Black |   .7639696   .5448952    -0.38   0.706     .1887832    3.091639
      Latino |   1.674345   .4267478     2.02   0.043     1.016004    2.759272
       Other |    9532549   2.02e+10     0.01   0.994            0           .
   AsianMale |   .3839457   2631.825    -0.00   1.000            0           .
```

```
   BlackMale |   .5487833   .6083395    -0.54   0.588     .0624919    4.819237
  LatinoMale |   .8009792   .2936397    -0.61   0.545     .3904541    1.643132
   OtherMale |   1.58e-13   4.48e-10    -0.01   0.992            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.043825   .0152094     2.94   0.003     1.014436    1.074064
       exper |   1.101223   .0246084     4.31   0.000     1.054033    1.150526
     charter |   4.653046   7.377172     0.97   0.332     .2080654    104.0578
pyperstudlep |   1.023579   .0068904     3.46   0.001     1.010163    1.037173
pyperstude~s |   1.011464   .0105756     1.09   0.276     .9909467    1.032405
pyperstudw~e |   .9117788   .0995009    -0.85   0.397     .7362058    1.129223
pyperstudb~k |   .9609497   .1082239    -0.35   0.724     .7706139    1.198297
pyperstudl~o |   .9001028   .0911126    -1.04   0.298     .7381244    1.097627
pyperstudm~e |   1.004528   .0081413     0.56   0.577     .9886978    1.020613
        male |   1.273506   .4240657     0.73   0.468     .6630687    2.445925
         age |   .9777948   .0188836    -1.16   0.245     .9414753    1.015515
       Asian |    9977466   3.16e+10     0.01   0.996            0           .
       Black |   .7121665   .6031655    -0.40   0.689     .1354132    3.745432
      Latino |   1.373764   .3855139     1.13   0.258     .7925794    2.381121
       Other |   2.199976   7774.514     0.00   1.000            0           .
   AsianMale |   .2092585   937.3837    -0.00   1.000            0           .
   BlackMale |   2.904968   3.198777     0.97   0.333     .3356211    25.14395
  LatinoMale |   .7291396    .313114    -0.74   0.462     .3142532    1.691771
   OtherMale |   1.09e-06   .0045216    -0.00   0.997            0           .
------------------------------------------------------------------------------


--------->  region = 20

Iteration 0:   log likelihood = -2163.5084
Iteration 1:   log likelihood = -2036.3755
Iteration 2:   log likelihood = -2029.5237
Iteration 3:   log likelihood = -2028.9128
Iteration 4:   log likelihood = -2028.7837
Iteration 5:   log likelihood = -2028.7558
Iteration 6:   log likelihood = -2028.7512
Iteration 7:   log likelihood = -2028.7501
Iteration 8:   log likelihood = -2028.7499
Iteration 9:   log likelihood = -2028.7499
Iteration 10:  log likelihood = -2028.7498

Multinomial logistic regression                 Number of obs   =       2149
                                                LR chi2(38)     =     269.52
                                                Prob > chi2     =     0.0000
Log likelihood = -2028.7498                     Pseudo R2       =     0.0623

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.000277   .0081247     0.03   0.973      .984479    1.016329
       exper |   1.000683   .0104556     0.07   0.948     .9803992    1.021387
     charter |   3.41e-07   .0004645    -0.01   0.991            0           .
pyperstudlep |   .9860863    .007419    -1.86   0.063      .971652    1.000735
pyperstude~s |   .9988632   .0047912    -0.24   0.813     .9895167    1.008298
pyperstudw~e |   .9858098   .0391697    -0.36   0.719     .9119519    1.065649
pyperstudb~k |   .9845658    .040982    -0.37   0.709     .9074317    1.068257
pyperstudl~o |   .9867348   .0391212    -0.34   0.736      .912962    1.066469
pyperstudm~e |   1.000411   .0042215     0.10   0.922     .9921715     1.00872
        male |   1.444028   .2077116     2.55   0.011     1.089274    1.914318
         age |   .9719119   .0086454    -3.20   0.001      .955114    .9890052
       Asian |   1.92e-07    .000243    -0.01   0.990            0           .
       Black |   1.446614    .432372     1.24   0.217     .8052685     2.59875
      Latino |   1.257101   .2013236     1.43   0.153     .9184403    1.720637
       Other |   1.936528   1.504969     0.85   0.395      .422196    8.882465
```

```
   AsianMale |   1.41e+14   6.39e+17     0.01   0.994           0           .
   BlackMale |   1.099034   .5097505     0.20   0.839     .4428023    2.727801
  LatinoMale |   1.407449   .3313934     1.45   0.147     .8871795    2.232821
   OtherMale |   1.67e-07   .0002199    -0.01   0.991           0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.021217   .0081054     2.65   0.008     1.005454    1.037228
       exper |   1.092765   .0145981     6.64   0.000     1.064525    1.121755
     charter |   3.768346   3.274579     1.53   0.127     .6862499     20.6928
pyperstudlep |    1.02437   .0067828     3.64   0.000     1.011162     1.03775
pyperstude~s |    1.02253   .0056635     4.02   0.000      1.01149    1.033691
pyperstudw~e |    1.10196   .0524119     2.04   0.041     1.003877    1.209626
pyperstudb~k |   1.066589   .0530851     1.30   0.195     .9674578    1.175878
pyperstudl~o |   1.067203   .0509734     1.36   0.173     .9718311    1.171935
pyperstudm~e |   1.009367    .004405     2.14   0.033      1.00077    1.018038
        male |   1.423562   .2207173     2.28   0.023     1.050512    1.929086
         age |   .9412916   .0114277    -4.98   0.000      .919158    .9639581
       Asian |   2.95e-07   .0003854    -0.01   0.991           0           .
       Black |   1.274556   .3897995     0.79   0.428     .6998979    2.321044
      Latino |   .9140471   .1547578    -0.53   0.596     .6559205    1.273755
       Other |   6.60e-07   .0007736    -0.01   0.990           0           .
   AsianMale |    6867328   5.69e+10     0.00   0.998           0           .
   BlackMale |   .9398883   .4865199    -0.12   0.905     .3407719    2.592321
  LatinoMale |   1.068903   .2801264     0.25   0.799     .6395351    1.786536
   OtherMale |    4145138   4.86e+09     0.01   0.990           0           .
------------------------------------------------------------------------------
by pyschooltype:
. bysort pyschooltype : mlogit admin  tenure exper  charter pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile m
> ale age Asian Black Latino Other AsianMale BlackMale LatinoMale OtherMale if
validcert2002a==1, rrr iter(20)


---------->  pyschooltype =

note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -416.12364
Iteration 1:   log likelihood = -361.70205
Iteration 2:   log likelihood = -359.23751
Iteration 3:   log likelihood = -358.99212
Iteration 4:   log likelihood = -358.93735
Iteration 5:   log likelihood = -358.92496
Iteration 6:   log likelihood = -358.92225
Iteration 7:   log likelihood = -358.92185
Iteration 8:   log likelihood =  -358.9218
Iteration 9:   log likelihood = -358.92179

Multinomial logistic regression                 Number of obs   =        388
                                                LR chi2(36)     =     114.40
                                                Prob > chi2     =     0.0000
Log likelihood = -358.92179                     Pseudo R2       =     0.1375

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.040388   .0231976     1.78   0.076     .9959012    1.086863
       exper |   1.039078   .0295033     1.35   0.177     .9828325    1.098543
     charter |   1.06e-06   .0011161    -0.01   0.990           0           .
pyperstudlep |   1.002098   .0137416     0.15   0.879     .9755236    1.029396
pyperstude~s |   .9892429    .010686    -1.00   0.317     .9685188     1.01041
pyperstudw~e |   1.019065   .0249492     0.77   0.440     .9713206    1.069157
pyperstudb~k |    1.03012   .0294374     1.04   0.299     .9740094    1.089462
pyperstudl~o |   1.028672   .0275033     1.06   0.290     .9761548    1.084015
pyperstudm~e |   .9797127   .0139037    -1.44   0.149     .9528375    1.007346
```

```
        male |   2.379315   .7851888     2.63   0.009     1.246092    4.543115
         age |   .9511188   .0229014    -2.08   0.037     .9072756    .9970806
       Asian |   5.185499   6.856702     1.24   0.213     .3883831    69.23421
       Black |   .6754868   .3994733    -0.66   0.507     .2119475    2.152808
      Latino |   1.205835   .5908772     0.38   0.702     .4615152    3.150572
       Other |   3.61e-07   .0007373    -0.01   0.994            0           .
   AsianMale |   3.25e-08   .0000939    -0.01   0.995            0           .
   BlackMale |   1.837092    2.05664     0.54   0.587     .2047404    16.48383
  LatinoMale |   1.100758   .7701821     0.14   0.891      .279332    4.337739
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.081181   .0243865     3.46   0.001     1.034425     1.13005
       exper |    1.02823   .0295041     0.97   0.332     .9719992    1.087714
     charter |   8.009124   8.611515     1.94   0.053     .9735584    65.88827
pyperstudlep |   1.003168   .0145916     0.22   0.828     .9749732    1.032179
pyperstude~s |   1.023058    .011516     2.03   0.043     1.000734    1.045879
pyperstudw~e |   1.103893   .0458953     2.38   0.017     1.017508    1.197613
pyperstudb~k |   1.081344   .0489777     1.73   0.084     .9894871    1.181728
pyperstudl~o |   1.076624   .0470108     1.69   0.091     .9883175    1.172821
pyperstudm~e |   .9759565   .0153225    -1.55   0.121     .9463822    1.006455
        male |   1.577289   .5606137     1.28   0.200     .7859048    3.165576
         age |   1.017082   .0240412     0.72   0.474      .971037    1.065311
       Asian |   3.02e-06   .0041467    -0.01   0.993            0           .
       Black |   .5014562   .3325928    -1.04   0.298     .1366691    1.839907
      Latino |   .8481147   .4712909    -0.30   0.767     .2853963     2.52035
       Other |   3.91e-07   .0007561    -0.01   0.994            0           .
   AsianMale |   .0442196   139.3584    -0.00   0.999            0           .
   BlackMale |   13.74023    16.3738     2.20   0.028     1.329364    142.0183
  LatinoMale |   1.362716   1.101561     0.38   0.702     .2794672    6.644774
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------> pyschooltype = B

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -629.13922
Iteration 1:   log likelihood = -592.24503
Iteration 2:   log likelihood =  -587.2169
Iteration 3:   log likelihood =  -586.8926
Iteration 4:   log likelihood = -586.82625
Iteration 5:   log likelihood = -586.81234
Iteration 6:   log likelihood = -586.80924
Iteration 7:   log likelihood = -586.80848
Iteration 8:   log likelihood = -586.80832
Iteration 9:   log likelihood = -586.80829
Iteration 10:  log likelihood = -586.80828  (not concave)
Iteration 11:  log likelihood = -586.80828  (not concave)
Iteration 12:  log likelihood = -586.80828  (not concave)
Iteration 13:  log likelihood = -586.80828  (not concave)
Iteration 14:  log likelihood = -586.80828  (not concave)
Iteration 15:  log likelihood = -586.80828  (not concave)
Iteration 16:  log likelihood = -586.80828  (not concave)
Iteration 17:  log likelihood = -586.80828  (not concave)
Iteration 18:  log likelihood = -586.80828  (not concave)
Iteration 19:  log likelihood = -586.80828  (not concave)
Iteration 20:  log likelihood = -586.80828  (not concave)
convergence not achieved

Multinomial logistic regression                 Number of obs   =        663
                                                LR chi2(35)     =      84.66
                                                Prob > chi2     =     0.0000
Log likelihood = -586.80828                     Pseudo R2       =     0.0673

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
```

```
-------------+------------------------------------------------------------------
1            |  (base outcome)
-------------+------------------------------------------------------------------
2            |
      tenure |   1.046406   .0215824     2.20   0.028     1.004949    1.089573
       exper |    .943274   .0235501    -2.34   0.019     .8982278    .9905793
     charter |   1.99e-12   8.12e-07    -0.00   1.000            0           .
pyperstudlep |    1.01932    .010378     1.88   0.060     .9991807    1.039864
pyperstude~s |   .9901945   .0072354    -1.35   0.177     .9761144    1.004478
pyperstudw~e |   .9569748   .0366494    -1.15   0.251      .887773    1.031571
pyperstudb~k |     .97603   .0392715    -0.60   0.547     .9020159    1.056117
pyperstudl~o |   .9667683   .0374109    -0.87   0.382      .896156    1.042945
pyperstudm~e |   1.002037   .0045967     0.44   0.657     .9930677    1.011087
        male |   1.232751    .426709     0.60   0.546     .6255143    2.429481
         age |   1.001546   .0207811     0.07   0.941      .961633    1.043116
       Asian |   2.00e-12   2.24e-06    -0.00   1.000            0           .
       Black |   1.671833    .870933     0.99   0.324     .6022322    4.641112
      Latino |   1.300329    .878686     0.39   0.698     .3458289    4.889284
       Other |   3.89e+09   5.03e+13     0.00   0.999            0           .
   AsianMale |  (omitted)
   BlackMale |    1.33011   .9419874     0.40   0.687     .3319439    5.329797
  LatinoMale |   2.311566   1.803472     1.07   0.283     .5009602    10.66619
   OtherMale |   1.42e-09   .0000184    -0.00   0.999            0           .
-------------+------------------------------------------------------------------
3            |
      tenure |   1.007158   .0119415     0.60   0.547     .9840231    1.030837
       exper |   1.030118   .0171576     1.78   0.075     .9970325    1.064301
     charter |   1.847801    .956963     1.19   0.236     .6696132    5.099016
pyperstudlep |   .9973836   .0097008    -0.27   0.788     .9785504    1.016579
pyperstude~s |   1.003997   .0051728     0.77   0.439     .9939094    1.014187
pyperstudw~e |   1.031936   .0354965     0.91   0.361     .9646571    1.103906
pyperstudb~k |   1.031635   .0368947     0.87   0.384     .9617992    1.106542
pyperstudl~o |   1.031169   .0357561     0.89   0.376     .9634163    1.103685
pyperstudm~e |   1.004196   .0032583     1.29   0.197     .9978297    1.010602
        male |   1.217263   .2457541     0.97   0.330     .8194731    1.808149
         age |    .969302   .0153389    -1.97   0.049     .9396997    .9998368
       Asian |   .8924037   1.126281    -0.09   0.928     .0752108     10.5887
       Black |   .7331307   .3237736    -0.70   0.482     .3085063    1.742203
      Latino |   .8903624   .4537904    -0.23   0.820     .3278956    2.417676
       Other |   1.013945    .945594     0.01   0.988     .1630021    6.307186
   AsianMale |  (omitted)
   BlackMale |   1.740287   1.050364     0.92   0.359      .533177    5.680286
  LatinoMale |   1.502258   .9318474     0.66   0.512     .4453958    5.066908
   OtherMale |   2.714069          .        .       .            .           .
------------------------------------------------------------------------------
Warning: convergence not achieved


---------->  pyschooltype = E

Iteration 0:   log likelihood = -9915.2681
Iteration 1:   log likelihood = -9307.8832
Iteration 2:   log likelihood = -9302.1873
Iteration 3:   log likelihood = -9302.1836
Iteration 4:   log likelihood = -9302.1836

Multinomial logistic regression                 Number of obs   =       9215
                                                LR chi2(38)     =    1226.17
                                                Prob > chi2     =     0.0000
Log likelihood = -9302.1836                     Pseudo R2       =     0.0618

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
```

```
      tenure |   1.002729   .0044052     0.62   0.535     .9941316      1.0114
       exper |   1.006348   .0058745     1.08   0.278        .9949    1.017928
     charter |   .5079197   .4386827    -0.78   0.433     .0934598    2.760357
pyperstudlep |   1.011915   .0020876     5.74   0.000     1.007832    1.016015
pyperstude~s |   .9819015   .0022774    -7.87   0.000      .977448    .9863753
pyperstudw~e |   .9948658   .0065373    -0.78   0.433     .9821351    1.007762
pyperstudb~k |   1.001603   .0071927     0.22   0.824     .9876039      1.0158
pyperstudl~o |   1.000345    .006865     0.05   0.960     .9869802    1.013891
pyperstudm~e |   1.013823   .0037897     3.67   0.000     1.006422    1.021277
        male |   1.769211   .1601698     6.30   0.000     1.481559    2.112713
         age |    .971009   .0045942    -6.22   0.000     .9620461    .9800553
       Asian |   .9727791    .447222    -0.06   0.952     .3950808    2.395204
       Black |   1.289281   .1368353     2.39   0.017     1.047146    1.587407
      Latino |   1.090785   .0977636     0.97   0.332      .915058    1.300258
       Other |   .6453753   .2430886    -1.16   0.245     .3084585    1.350293
   AsianMale |   2.071521   1.743099     0.87   0.387     .3981425    10.77805
   BlackMale |   .8207584   .1726332    -0.94   0.348     .5434742    1.239515
  LatinoMale |   .6910558   .1117733    -2.28   0.022     .5033122    .9488309
   OtherMale |   .5466787   .4244764    -0.78   0.437     .1193451    2.504146
-------------+----------------------------------------------------------------
3            |
      tenure |   1.018288   .0036768     5.02   0.000     1.011107     1.02552
       exper |   1.064161   .0056614    11.69   0.000     1.053122    1.075315
     charter |    3.30851   2.017365     1.96   0.050      1.00141    10.93082
pyperstudlep |   1.001527   .0018904     0.81   0.419     .9978285    1.005239
pyperstude~s |   1.002443    .002074     1.18   0.238     .9983866    1.006516
pyperstudw~e |   1.010377   .0067041     1.56   0.120     .9973225    1.023603
pyperstudb~k |   .9998559   .0072106    -0.02   0.984     .9858227    1.014089
pyperstudl~o |   1.000611   .0069171     0.09   0.930      .987145     1.01426
pyperstudm~e |   1.002534   .0035863     0.71   0.479     .9955294    1.009588
        male |   2.923842   .2276267    13.78   0.000     2.510073     3.40582
         age |   .9824739   .0044549    -3.90   0.000     .9737812    .9912442
       Asian |   .6758191   .3673565    -0.72   0.471     .2328846    1.961192
       Black |    1.00133   .1038202     0.01   0.990     .8171892    1.226964
      Latino |   1.184218   .0983511     2.04   0.042     1.006325    1.393559
       Other |   .5870847   .2103736    -1.49   0.137     .2908604    1.184996
   AsianMale |   .8632089   .8407872    -0.15   0.880     .1279453    5.823816
   BlackMale |   .5858149   .1175184    -2.67   0.008     .3953699    .8679949
  LatinoMale |   .5362033   .0777074    -4.30   0.000     .4036195    .7123393
   OtherMale |   .2632876   .2058887    -1.71   0.088     .0568588    1.219166
------------------------------------------------------------------------------


---------->  pyschooltype = M

Iteration 0:   log likelihood = -5525.7566
Iteration 1:   log likelihood =  -5219.576
Iteration 2:   log likelihood = -5214.0921
Iteration 3:   log likelihood = -5213.8313
Iteration 4:   log likelihood = -5213.7702
Iteration 5:   log likelihood = -5213.7584
Iteration 6:   log likelihood = -5213.7564
Iteration 7:   log likelihood =  -5213.756
Iteration 8:   log likelihood = -5213.7559
Iteration 9:   log likelihood = -5213.7558

Multinomial logistic regression                 Number of obs   =       5232
                                                LR chi2(38)     =     624.00
                                                Prob > chi2     =     0.0000
Log likelihood = -5213.7558                     Pseudo R2       =     0.0565

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
```

```
      tenure |   1.007826   .0050848     1.55   0.122     .9979089    1.017841
       exper |   .9978592   .0064219    -0.33   0.739     .9853517    1.010526
     charter |   4.01e-07   .0012115    -0.00   0.996            0           .
pyperstudlep |   1.010875   .0039096     2.80   0.005     1.003241    1.018567
pyperstude~s |   1.001746   .0028017     0.62   0.533     .9962696    1.007252
pyperstudw~e |   .9799973   .0087527    -2.26   0.024     .9629916    .9973034
pyperstudb~k |   .9834128   .0096212    -1.71   0.087     .9647352    1.002452
pyperstudl~o |   .9758559   .0092321    -2.58   0.010      .957928    .9941193
pyperstudm~e |   1.001249   .0037818     0.33   0.741     .9938645    1.008689
        male |   1.496611   .1236718     4.88   0.000     1.272829    1.759736
         age |    .959904   .0052195    -7.53   0.000     .9497283    .9701888
       Asian |   .4958067   .3466623    -1.00   0.316     .1259395    1.951923
       Black |   1.039604   .1359342     0.30   0.766     .8045784    1.343283
      Latino |   1.929151   .2543876     4.98   0.000     1.489781    2.498101
       Other |   .6214677   .3021381    -0.98   0.328     .2396575    1.611558
   AsianMale |   7.423556   8.191066     1.82   0.069      .853898    64.53836
   BlackMale |   1.439738   .2779177     1.89   0.059     .9862186    2.101812
  LatinoMale |   .9310831    .160557    -0.41   0.679     .6640584    1.305481
   OtherMale |   1.916825   1.253688     0.99   0.320     .5319357    6.907258
-------------+----------------------------------------------------------------
3            |
      tenure |   1.007322   .0049772     1.48   0.140     .9976137    1.017124
       exper |   1.073525    .008282     9.20   0.000     1.057415    1.089881
     charter |   1.11e-06   .0039834    -0.00   0.997            0           .
pyperstudlep |   1.001908   .0048816     0.39   0.696     .9923859    1.011522
pyperstude~s |    1.01243   .0032614     3.83   0.000     1.006058    1.018843
pyperstudw~e |   1.026721   .0121732     2.22   0.026     1.003137    1.050859
pyperstudb~k |   1.007395   .0130123     0.57   0.568     .9822117    1.033224
pyperstudl~o |   1.007885   .0126068     0.63   0.530     .9834763    1.032899
pyperstudm~e |   1.002328   .0043095     0.54   0.589     .9939168     1.01081
        male |   1.937921    .173592     7.39   0.000      1.62588    2.309849
         age |   .9531985   .0067623    -6.76   0.000     .9400364    .9665448
       Asian |   8.40e-07   .0007356    -0.02   0.987            0           .
       Black |   1.046602   .1731622     0.28   0.783     .7567437    1.447486
      Latino |   1.777542   .2832827     3.61   0.000     1.300666    2.429259
       Other |   .2195509   .2275669    -1.46   0.144     .0287909    1.674229
   AsianMale |    4811017   4.22e+09     0.02   0.986            0           .
   BlackMale |   1.431308    .329392     1.56   0.119     .9116812    2.247104
  LatinoMale |   .7874837   .1578503    -1.19   0.233     .5316419    1.166444
   OtherMale |   5.425053   6.145213     1.49   0.135     .5891257    49.95742
------------------------------------------------------------------------------


---------->  pyschooltype = S

Iteration 0:   log likelihood = -6808.9816
Iteration 1:   log likelihood = -6499.8194
Iteration 2:   log likelihood = -6488.0995
Iteration 3:   log likelihood = -6487.8759
Iteration 4:   log likelihood = -6487.8282
Iteration 5:   log likelihood = -6487.8171
Iteration 6:   log likelihood = -6487.8146
Iteration 7:   log likelihood =  -6487.814
Iteration 8:   log likelihood = -6487.8139
Iteration 9:   log likelihood = -6487.8139

Multinomial logistic regression                 Number of obs   =       6954
                                                LR chi2(38)     =     642.34
                                                Prob > chi2     =     0.0000
Log likelihood = -6487.8139                     Pseudo R2       =     0.0472

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
```

```
      tenure |   1.003951   .0038992     1.02   0.310      .996338    1.011623
       exper |   1.002029   .0053775     0.38   0.706     .9915445    1.012624
     charter |   .3321966   .2725753    -1.34   0.179     .0665218    1.658924
pyperstudlep |   1.021465    .004327     5.01   0.000     1.013019    1.029981
pyperstude~s |   .9906754   .0022618    -4.10   0.000     .9862523    .9951185
pyperstudw~e |   .9770149   .0067675    -3.36   0.001     .9638405    .9903694
pyperstudb~k |     .98273   .0073031    -2.34   0.019       .96852    .9971485
pyperstudl~o |   .9805496   .0071268    -2.70   0.007     .9666802    .9946179
pyperstudm~e |   1.000362   .0023777     0.15   0.879     .9957123    1.005033
        male |    1.22496   .0845284     2.94   0.003     1.070002    1.402358
         age |   .9727633   .0047535    -5.65   0.000      .963491    .9821248
       Asian |   .2358706   .2484248    -1.37   0.170     .0299342    1.858577
       Black |   1.366743   .1716778     2.49   0.013     1.068481    1.748264
      Latino |   1.455034   .1815263     3.01   0.003     1.139409    1.858091
       Other |   .9094922   .4508387    -0.19   0.848     .3442351    2.402939
   AsianMale |   7.757967   9.394839     1.69   0.091     .7226856    83.28111
   BlackMale |   1.895473   .3234194     3.75   0.000     1.356686    2.648231
  LatinoMale |    1.28785   .1987027     1.64   0.101     .9517726    1.742599
   OtherMale |   1.518432   .9526422     0.67   0.506     .4439802    5.193102
-------------+----------------------------------------------------------------
3            |
      tenure |    .992581   .0044492    -1.66   0.097     .9838989     1.00134
       exper |   1.050212   .0073875     6.96   0.000     1.035832    1.064791
     charter |   .8524306   .5122505    -0.27   0.790     .2625108    2.768031
pyperstudlep |   1.009893   .0060406     1.65   0.100     .9981225    1.021802
pyperstude~s |   1.010483   .0027005     3.90   0.000     1.005204     1.01579
pyperstudw~e |   1.046059   .0130195     3.62   0.000      1.02085    1.071891
pyperstudb~k |   1.031236   .0134975     2.35   0.019     1.005118    1.058033
pyperstudl~o |   1.028568   .0131688     2.20   0.028     1.003078    1.054705
pyperstudm~e |   1.017641   .0023244     7.66   0.000     1.013095    1.022207
        male |     1.9832   .1781897     7.62   0.000     1.662978    2.365085
         age |   .9715282   .0065821    -4.26   0.000     .9587128    .9845149
       Asian |   1.422078   1.115167     0.45   0.653     .3057926    6.613322
       Black |   .8006067      .1766    -1.01   0.313     .5195877    1.233615
      Latino |   1.425036   .2578362     1.96   0.050     .9995746    2.031591
       Other |    .843421   .6467378    -0.22   0.824     .1876465    3.790953
   AsianMale |   7.56e-07   .0005685    -0.02   0.985            0           .
   BlackMale |   2.227513   .5895983     3.03   0.002     1.325917    3.742174
  LatinoMale |   .9758067   .2070924    -0.12   0.908     .6437481    1.479148
   OtherMale |   2.295273    2.01561     0.95   0.344     .4105311    12.83284
------------------------------------------------------------------------------
```

2002-03

```
. mlogit admin  tenure exper  pyperstudlep pyperstudecodis pyperstudwhite pyperstudblack
pyperstudlatino pyperstudmobile male age Asian Black Latino O
> ther AsianMale BlackMale LatinoMale OtherMale if validcert2003a==1, rrr

Iteration 0:   log likelihood = -24560.309
Iteration 1:   log likelihood = -23544.944
Iteration 2:   log likelihood = -23531.479
Iteration 3:   log likelihood = -23531.469
Iteration 4:   log likelihood = -23531.469

Multinomial logistic regression                 Number of obs   =      23106
                                                LR chi2(36)     =    2057.68
                                                Prob > chi2     =     0.0000
Log likelihood = -23531.469                     Pseudo R2       =     0.0419

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.008692   .0024227     3.60   0.000     1.003955    1.013451
       exper |   1.000306   .0031543     0.10   0.923      .994143    1.006508
```

```
pyperstudlep |   1.009471   .0013763     6.91   0.000     1.006777    1.012172
pyperstude~s |   .9915899   .0012128    -6.91   0.000     .9892157    .9939697
pyperstudw~e |   .9881112   .0037868    -3.12   0.002     .9807171    .9955612
pyperstudb~k |    .994245   .0041589    -1.38   0.168      .986127     1.00243
pyperstudl~o |   .9928997    .003973    -1.78   0.075     .9851433    1.000717
pyperstudm~e |   .9975862   .0013882    -1.74   0.082     .9948691    1.000311
        male |   1.216088   .0499931     4.76   0.000     1.121946    1.318128
         age |   .9694569   .0026185   -11.48   0.000     .9643383    .9746027
       Asian |   .5588385   .1897328    -1.71   0.087     .2872716    1.087126
       Black |   1.236664   .0800261     3.28   0.001     1.089355    1.403893
      Latino |   1.242796   .0744444     3.63   0.000     1.105127    1.397614
       Other |   .7434571   .1718305    -1.28   0.200     .4726321    1.169469
   AsianMale |   2.659466   1.317959     1.97   0.048     1.006844    7.024682
   BlackMale |   1.536886   .1553285     4.25   0.000     1.260704    1.873571
  LatinoMale |   1.318189   .1106217     3.29   0.001     1.118267    1.553853
   OtherMale |   1.536992   .5217277     1.27   0.205      .790194    2.989576
-------------+----------------------------------------------------------------
3            |
      tenure |   1.013875   .0022528     6.20   0.000     1.009469      1.0183
       exper |   1.050538   .0035036    14.78   0.000     1.043694    1.057428
pyperstudlep |   1.012877   .0014148     9.16   0.000     1.010108    1.015654
pyperstude~s |   1.017948   .0012613    14.36   0.000     1.015479    1.020423
pyperstudw~e |   1.012814   .0044913     2.87   0.004     1.004049    1.021655
pyperstudb~k |   .9939462   .0047989    -1.26   0.209     .9845849    1.003397
pyperstudl~o |   .9903931    .004572    -2.09   0.037     .9814725    .9993947
pyperstudm~e |   1.003404   .0013489     2.53   0.011     1.000763    1.006051
        male |   1.311817   .0533533     6.67   0.000     1.211306    1.420668
         age |   .9741978   .0029399    -8.66   0.000     .9684526     .979977
       Asian |    .681595   .2497663    -1.05   0.296       .33236    1.397797
       Black |   .8319797    .061345    -2.49   0.013     .7200298    .9613356
      Latino |   1.196388   .0753073     2.85   0.004      1.05753    1.353478
       Other |   .5392751   .1463241    -2.28   0.023     .3168471    .9178485
   AsianMale |   1.690708    .925688     0.96   0.337     .5781263    4.944407
   BlackMale |   1.567589   .1789938     3.94   0.000     1.253252    1.960766
  LatinoMale |   .9559316   .0863965    -0.50   0.618     .8007478     1.14119
   OtherMale |    1.91415   .7280625     1.71   0.088     .9082694    4.034014
------------------------------------------------------------------------------

. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=23106)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     40.838    2    0.000
       exper |    252.734    2    0.000
pyperstudlep |     97.842    2    0.000
pyperstude~s |    369.832    2    0.000
pyperstudw~e |     28.249    2    0.000
pyperstudb~k |      2.587    2    0.274
pyperstudl~o |      5.615    2    0.060
pyperstudm~e |     13.751    2    0.001
        male |     51.584    2    0.000
         age |    165.063    2    0.000
       Asian |      3.542    2    0.170
       Black |     25.063    2    0.000
      Latino |     15.959    2    0.000
       Other |      6.164    2    0.046
   AsianMale |      4.108    2    0.128
   BlackMale |     24.368    2    0.000
  LatinoMale |     14.637    2    0.001
   OtherMale |      3.592    2    0.166
---------------------------------------

**** Wald tests for independent variables (N=23106)
```

```
 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+------------------------
      tenure |     40.720    2    0.000
       exper |    239.384    2    0.000
pyperstudlep |     96.306    2    0.000
pyperstude~s |    359.510    2    0.000
pyperstudw~e |     27.948    2    0.000
pyperstudb~k |      2.581    2    0.275
pyperstudl~o |      5.607    2    0.061
pyperstudm~e |     13.832    2    0.001
        male |     51.478    2    0.000
         age |    162.231    2    0.000
       Asian |      3.396    2    0.183
       Black |     25.012    2    0.000
      Latino |     15.937    2    0.000
       Other |      5.797    2    0.055
   AsianMale |      4.003    2    0.135
   BlackMale |     24.029    2    0.000
  LatinoMale |     14.645    2    0.001
   OtherMale |      3.549    2    0.170
-----------------------------------------

**** Hausman tests of IIA assumption (N=23106)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+----------------------------------
       2 |   -62.536   18     ---    ---
       3 |   -19.290   18     ---    ---
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=23106)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+--------------------------------------------------------
       2 |  -5223.460  -5211.742  23.436   19    0.219   for Ho
       3 |  -5482.951  -5475.074  15.755   19    0.674   for Ho
-------------------------------------------------------------------

**** Wald tests for combining alternatives (N=23106)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1352.429   18    0.000
       2-       1  |  608.254   18    0.000
       3-       1  | 1007.611   18    0.000
-----------------------------------------------

**** LR tests for combining alternatives (N=23106)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1493.488   18    0.000
```

```
       2-       1  |  632.497   18    0.000
       3-       1  | 1090.670   18    0.000
-------------------------------------------
by region:
. bysort region: mlogit admin  tenure exper  pyperstudlep pyperstudecodis pyperstudwhite
pyperstudblack pyperstudlatino pyperstudmobile male age Asian
>  Black Latino Other AsianMale BlackMale LatinoMale OtherMale if validcert2003a==1, rrr

 -------------
--------->  region = 1

note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -1718.8996
Iteration 1:   log likelihood = -1628.0134
Iteration 2:   log likelihood = -1625.8564
Iteration 3:   log likelihood = -1625.6309
Iteration 4:   log likelihood = -1625.5955
Iteration 5:   log likelihood = -1625.5873
Iteration 6:   log likelihood = -1625.5853
Iteration 7:   log likelihood = -1625.5849
Iteration 8:   log likelihood = -1625.5848
Iteration 9:   log likelihood = -1625.5848

Multinomial logistic regression                 Number of obs   =       1590
                                                LR chi2(34)     =     186.63
                                                Prob > chi2     =     0.0000
Log likelihood = -1625.5848                     Pseudo R2       =     0.0543

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.016374   .0092499     1.78   0.074     .9984052    1.034666
       exper |   1.011984   .0135318     0.89   0.373     .9858064    1.038856
pyperstudlep |   1.007248   .0033165     2.19   0.028     1.000769    1.013769
pyperstude~s |   1.015603   .0068321     2.30   0.021       1.0023    1.029082
pyperstudw~e |    .964602   .0682431    -0.51   0.610     .8397073    1.108073
pyperstudb~k |   .8540418   .1030419    -1.31   0.191     .6741863    1.081878
pyperstudl~o |   .9388771   .0623177    -0.95   0.342     .8243478    1.069318
pyperstudm~e |   .9947113   .0056668    -0.93   0.352     .9836664     1.00588
        male |   1.220884   .3367594     0.72   0.469     .7110259    2.096348
         age |   .9560144   .0109234    -3.94   0.000     .9348429    .9776654
       Asian |   1.53e-07   .0002914    -0.01   0.993            0           .
       Black |   9.34e-07   .0010271    -0.01   0.990            0           .
      Latino |   .7385332   .1515242    -1.48   0.140     .4940031    1.104105
       Other |   .3713015   .4351981    -0.85   0.398     .0373288     3.69326
   AsianMale |   1.78e+13   4.93e+16     0.01   0.991            0           .
   BlackMale |   .3629168     580.62    -0.00   0.999            0           .
  LatinoMale |   1.354478   .4175807     0.98   0.325     .7402008    2.478531
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.030013   .0095567     3.19   0.001     1.011451    1.048915
       exper |   1.074257    .017495     4.40   0.000     1.040508    1.109099
pyperstudlep |   1.020101   .0036253     5.60   0.000      1.01302    1.027231
pyperstude~s |   1.003264   .0074664     0.44   0.661     .9887368    1.018005
pyperstudw~e |   1.017542    .083813     0.21   0.833     .8658457    1.195815
pyperstudb~k |   1.030146   .1042474     0.29   0.769     .8448114    1.256138
pyperstudl~o |   .9999664    .077158    -0.00   1.000     .8596194    1.163227
pyperstudm~e |   1.006666    .005358     1.25   0.212     .9962189    1.017222
        male |    .742661   .2530413    -0.87   0.383     .3808615    1.448152
         age |   .9473974   .0139532    -3.67   0.000     .9204406    .9751438
       Asian |   3.54e-07   .0007781    -0.01   0.995            0           .
       Black |    3.44254   4.941282     0.86   0.389     .2065851    57.36659
      Latino |   .8384463   .1867635    -0.79   0.429     .5418392    1.297418
```

```
       Other |   .5900503   .7103065    -0.44   0.661     .0557451    6.245556
   AsianMale |    8303650   3.24e+10     0.00   0.997            0           .
   BlackMale |   2.47e-07   .0002464    -0.02   0.988            0           .
  LatinoMale |    1.81997   .6801564     1.60   0.109     .8748922    3.785942
   OtherMale |  (omitted)
-------------------------------------------------------------------------------

 -------------
---------> region = 2

Iteration 0:   log likelihood = -800.63106
Iteration 1:   log likelihood = -760.02092
Iteration 2:   log likelihood = -758.34512
Iteration 3:   log likelihood = -758.05489
Iteration 4:   log likelihood = -757.98907
Iteration 5:   log likelihood = -757.97328
Iteration 6:   log likelihood = -757.97014
Iteration 7:   log likelihood = -757.96963
Iteration 8:   log likelihood = -757.96951
Iteration 9:   log likelihood = -757.96948

Multinomial logistic regression                 Number of obs   =        814
                                                LR chi2(36)     =      85.32
                                                Prob > chi2     =     0.0000
Log likelihood = -757.96948                     Pseudo R2       =     0.0533

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |    1.01331   .0152991     0.88   0.381     .9837639    1.043744
       exper |   .9735664   .0194532    -1.34   0.180     .9361757     1.01245
pyperstudlep |   .9920679   .0175162    -0.45   0.652     .9583239       1.027
pyperstude~s |   1.004794   .0070677     0.68   0.497     .9910366    1.018742
pyperstudw~e |    1.01352   .0381124     0.36   0.721     .9415074     1.09104
pyperstudb~k |   1.034591    .048982     0.72   0.473     .9429074    1.135189
pyperstudl~o |   1.008489   .0363373     0.23   0.815     .9397261    1.082284
pyperstudm~e |   .9892515   .0084697    -1.26   0.207     .9727897    1.005992
        male |   1.184559   .3428308     0.59   0.558     .6717455    2.088855
         age |    .976906   .0158308    -1.44   0.149     .9463658    1.008432
       Asian |   3.59e+07   1.29e+11     0.00   0.996            0           .
       Black |   1.663593   1.679059     0.50   0.614      .230108    12.02714
      Latino |   1.050252   .2819683     0.18   0.855     .6205336    1.777548
       Other |   5.35e-07   .0004999    -0.02   0.988            0           .
   AsianMale |   1.89e-14   7.37e-11    -0.01   0.994            0           .
   BlackMale |   1.736566   2.207588     0.43   0.664     .1437514    20.97831
  LatinoMale |   1.899713   .7487545     1.63   0.104     .8773945    4.113214
   OtherMale |    1793809   1.68e+09     0.02   0.988            0           .
-------------+-----------------------------------------------------------------
3            |
      tenure |   .9968411   .0118416    -0.27   0.790     .9739001    1.020322
       exper |   1.039612   .0184867     2.18   0.029     1.004003    1.076484
pyperstudlep |   .9865654    .014765    -0.90   0.366     .9580468    1.015933
pyperstude~s |   1.033386   .0073365     4.63   0.000     1.019106    1.047866
pyperstudw~e |   1.003679   .0320927     0.11   0.909      .942709    1.068592
pyperstudb~k |   .9647662   .0425228    -0.81   0.416     .8849215    1.051815
pyperstudl~o |   .9830022   .0299166    -0.56   0.573     .9260812    1.043422
pyperstudm~e |   .9913965   .0085756    -1.00   0.318     .9747302    1.008348
        male |   1.279203   .3337797     0.94   0.345     .7670742     2.13325
         age |   .9773386   .0157144    -1.43   0.154     .9470192    1.008629
       Asian |   1.360309   8959.961     0.00   1.000            0           .
       Black |   3.370632   2.864529     1.43   0.153     .6372626    17.82806
      Latino |   .9541458   .2327468    -0.19   0.847     .5915336    1.539041
       Other |   8.72e-07     .00073    -0.02   0.987            0           .
   AsianMale |   8.71e-07   .0058566    -0.00   0.998            0           .
```

```
   BlackMale |   .5081421   .5849922    -0.59   0.556      .053217    4.851993
  LatinoMale |   1.244329   .4569424     0.60   0.552     .6058384    2.555721
   OtherMale |   1.805948   2018.407     0.00   1.000            0           .
------------------------------------------------------------------------------

 -------------
---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -356.40628
Iteration 1:   log likelihood = -321.69075
Iteration 2:   log likelihood = -320.83474
Iteration 3:   log likelihood = -320.79017
Iteration 4:   log likelihood = -320.78039
Iteration 5:   log likelihood =  -320.7783
Iteration 6:   log likelihood = -320.77795
Iteration 7:   log likelihood = -320.77791
Iteration 8:   log likelihood =  -320.7779

Multinomial logistic regression                 Number of obs   =        335
                                                LR chi2(30)     =      71.26
                                                Prob > chi2     =     0.0000
Log likelihood =  -320.7779                     Pseudo R2       =     0.1000

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.02189   .0224711     0.98   0.325     .9787834    1.066896
       exper |   .9381358   .0241596    -2.48   0.013      .891959    .9867031
pyperstudlep |   .9735801   .0353911    -0.74   0.461     .9066283    1.045476
pyperstude~s |   1.002111   .0141545     0.15   0.881     .9747487     1.03024
pyperstudw~e |   .9819826   .0497053    -0.36   0.719     .8892386      1.0844
pyperstudb~k |   .9920796   .0504692    -0.16   0.876     .8979333    1.096097
pyperstudl~o |   .9950028   .0516044    -0.10   0.923     .8988308    1.101465
pyperstudm~e |    .999818   .0121117    -0.02   0.988     .9763591    1.023841
        male |   1.003844   .3483185     0.01   0.991      .508525    1.981619
         age |   1.001338   .0238662     0.06   0.955     .9556368    1.049225
       Asian |  (omitted)
       Black |   3.495986   2.394599     1.83   0.068     .9131316    13.38462
      Latino |   2.318142   1.302115     1.50   0.134     .7709293    6.970525
       Other |    1.89676   3052.004     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   1.442027   2.067535     0.26   0.798     .0868053    23.95523
  LatinoMale |   .6977054   .5851725    -0.43   0.668      .134822    3.610633
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.019264   .0184372     1.05   0.291     .9837612    1.056049
       exper |   1.006553   .0263535     0.25   0.803     .9562042    1.059553
pyperstudlep |   1.008247   .0314453     0.26   0.792     .9484612    1.071801
pyperstude~s |   1.043018    .013456     3.26   0.001     1.016975    1.069728
pyperstudw~e |    1.06588   .0561522     1.21   0.226     .9613146    1.181818
pyperstudb~k |   1.061332   .0559803     1.13   0.259     .9570938    1.176924
pyperstudl~o |    1.01946   .0548514     0.36   0.720     .9174274     1.13284
pyperstudm~e |   1.014714   .0118447     1.25   0.211     .9917627    1.038197
        male |   1.406486   .4539358     1.06   0.291     .7471621    2.647623
         age |   1.009138   .0258703     0.35   0.723     .9596858    1.061138
       Asian |  (omitted)
       Black |   2.080475   1.555357     0.98   0.327     .4806255    9.005714
      Latino |   1.297406   .8134097     0.42   0.678      .379677    4.433405
       Other |    2820124   2.67e+09     0.02   0.987            0           .
   AsianMale |  (omitted)
```

```
   BlackMale |   .7222231   1.173987    -0.20   0.841     .0298557     17.4709
  LatinoMale |   1.490586   1.267395     0.47   0.639     .2815848     7.89051
   OtherMale |  (omitted)
-------------------------------------------------------------------------------

 -------------
---------->  region = 4

Iteration 0:   log likelihood = -4957.5426
Iteration 1:   log likelihood = -4724.4629
Iteration 2:   log likelihood = -4718.8152
Iteration 3:   log likelihood = -4718.7988
Iteration 4:   log likelihood = -4718.7988

Multinomial logistic regression                 Number of obs   =       4797
                                                LR chi2(36)     =     477.49
                                                Prob > chi2     =     0.0000
Log likelihood = -4718.7988                     Pseudo R2       =     0.0482

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.012006   .0052311     2.31   0.021     1.001805    1.022311
       exper |    1.03212   .0072327     4.51   0.000     1.018041    1.046393
pyperstudlep |   .9982264   .0033448    -0.53   0.596     .9916923    1.004804
pyperstude~s |   .9932129   .0031954    -2.12   0.034     .9869698    .9994956
pyperstudw~e |   1.001137   .0062772     0.18   0.856     .9889092    1.013516
pyperstudb~k |   1.003618   .0074135     0.49   0.625     .9891925    1.018254
pyperstudl~o |   1.008747   .0072302     1.22   0.224     .9946748    1.023018
pyperstudm~e |   1.002387   .0033832     0.71   0.480     .9957778     1.00904
        male |   1.108104   .1010565     1.13   0.260     .9267289    1.324976
         age |   .9475585   .0056777    -8.99   0.000     .9364955    .9587522
       Asian |   .6325732   .3432276    -0.84   0.399     .2184025    1.832162
       Black |   .9116158   .0994605    -0.85   0.396       .73611    1.128966
      Latino |   1.299717   .1860647     1.83   0.067      .981731    1.720699
       Other |   .5889339   .2646127    -1.18   0.239     .2441265    1.420752
   AsianMale |   2.107752    1.83318     0.86   0.391     .3832678    11.59143
   BlackMale |   1.768447   .3021539     3.34   0.001     1.265195    2.471878
  LatinoMale |   1.195204   .2793061     0.76   0.445     .7560063     1.88955
   OtherMale |   .8737306    .812862    -0.15   0.885     .1410832     5.41103
-------------+-----------------------------------------------------------------
3            |
      tenure |   1.032052   .0058138     5.60   0.000      1.02072     1.04351
       exper |   1.065715   .0089826     7.55   0.000     1.048254    1.083467
pyperstudlep |   1.013779   .0039424     3.52   0.000     1.006081    1.021535
pyperstude~s |   1.018372   .0039941     4.64   0.000     1.010574     1.02623
pyperstudw~e |   1.013908    .007937     1.76   0.078     .9984702    1.029584
pyperstudb~k |   .9960688   .0093377    -0.42   0.674     .9779343    1.014539
pyperstudl~o |   .9889355   .0088461    -1.24   0.214     .9717486    1.006426
pyperstudm~e |   1.007297   .0037671     1.94   0.052     .9999402    1.014707
        male |   .9641851   .1033461    -0.34   0.734     .7814918    1.189588
         age |   .9622669   .0071807    -5.15   0.000     .9482953    .9764443
       Asian |   .7452754   .4527204    -0.48   0.628     .2265955    2.451221
       Black |   .5410127   .0734625    -4.52   0.000     .4145962    .7059754
      Latino |   1.195778   .1962345     1.09   0.276     .8668884    1.649445
       Other |   .5355614   .3023162    -1.11   0.269      .177141    1.619196
   AsianMale |   .6037941   .7728825    -0.39   0.693     .0491263    7.421019
   BlackMale |   2.073375   .4450302     3.40   0.001     1.361368    3.157767
  LatinoMale |   1.172679   .3356573     0.56   0.578     .6691738    2.055037
   OtherMale |   1.912363   1.916033     0.65   0.518      .268371    13.62716
-------------------------------------------------------------------------------

 -------------
---------->  region = 5
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -555.1928
Iteration 1:   log likelihood = -502.16288
Iteration 2:   log likelihood = -500.32389
Iteration 3:   log likelihood = -500.07437
Iteration 4:   log likelihood = -500.04099
Iteration 5:   log likelihood =  -500.0369
Iteration 6:   log likelihood = -500.03613
Iteration 7:   log likelihood = -500.03596
Iteration 8:   log likelihood = -500.03592
Iteration 9:   log likelihood = -500.03591

Multinomial logistic regression                 Number of obs   =        552
                                                LR chi2(34)     =     110.31
                                                Prob > chi2     =     0.0000
Log likelihood = -500.03591                     Pseudo R2       =     0.0993

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9913602   .0152678    -0.56   0.573      .961883    1.021741
       exper |   1.011213   .0235247     0.48   0.632     .9661407    1.058388
pyperstudlep |   .9878875   .0390787    -0.31   0.758     .9141886    1.067528
pyperstude~s |   1.013079   .0087884     1.50   0.134     .9959992    1.030451
pyperstudw~e |   1.000541   .0417756     0.01   0.990     .9219227    1.085863
pyperstudb~k |   .9874911   .0421202    -0.30   0.768     .9082935    1.073594
pyperstudl~o |   1.005354   .0561113     0.10   0.924       .90118    1.121571
pyperstudm~e |   .9943601    .014176    -0.40   0.692     .9669602    1.022536
        male |   2.607997   .7290606     3.43   0.001      1.50784    4.510854
         age |   .9620171   .0197501    -1.89   0.059      .924076    1.001516
       Asian |   1.63e-07   .0004753    -0.01   0.996            0           .
       Black |   2.832828   1.041271     2.83   0.005     1.378293     5.82236
      Latino |    9667192   1.43e+10     0.01   0.991            0           .
       Other |   3.29e-07    .000961    -0.01   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   .7938955   .4024914    -0.46   0.649      .293913    2.144411
  LatinoMale |   1.34e-07   .0001986    -0.01   0.991            0           .
   OtherMale |   7.65e+13   3.77e+17     0.01   0.995            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9963773   .0142255    -0.25   0.799     .9688824    1.024653
       exper |   1.061643    .026223     2.42   0.015     1.011471    1.114303
pyperstudlep |   .9933615   .0461423    -0.14   0.886     .9069189    1.088043
pyperstude~s |   1.041973   .0092536     4.63   0.000     1.023994    1.060269
pyperstudw~e |    1.00123   .0446716     0.03   0.978     .9173938    1.092727
pyperstudb~k |   .9660081   .0439425    -0.76   0.447     .8836101     1.05609
pyperstudl~o |   .9699712   .0604759    -0.49   0.625     .8583966    1.096048
pyperstudm~e |   1.029758   .0106392     2.84   0.005     1.009115    1.050823
        male |   3.807508   1.062602     4.79   0.000     2.203366    6.579529
         age |   .9786958   .0222674    -0.95   0.344     .9360113    1.023327
       Asian |   6.13e-07   .0018062    -0.00   0.996            0           .
       Black |   1.922647   .8039084     1.56   0.118     .8472081    4.363238
      Latino |   1.98e+07   2.92e+10     0.01   0.991            0           .
       Other |   2.44e-06   .0071909    -0.00   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   1.031256    .568037     0.06   0.955     .3503544    3.035469
  LatinoMale |   2.37e-14   4.40e-11    -0.02   0.987            0           .
   OtherMale |   361503.2   2.86e+09     0.00   0.999            0           .
------------------------------------------------------------------------------

 -------------
--------->  region = 6
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -831.29754
Iteration 1:   log likelihood = -780.60601
Iteration 2:   log likelihood = -778.48327
Iteration 3:   log likelihood = -778.32096
Iteration 4:   log likelihood = -778.28731
Iteration 5:   log likelihood = -778.28002
Iteration 6:   log likelihood = -778.27881
Iteration 7:   log likelihood = -778.27852
Iteration 8:   log likelihood = -778.27845
Iteration 9:   log likelihood = -778.27844

Multinomial logistic regression                 Number of obs   =        768
                                                LR chi2(34)     =     106.04
                                                Prob > chi2     =     0.0000
Log likelihood = -778.27844                     Pseudo R2       =     0.0638

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    .974689   .0130779    -1.91   0.056     .9493909    1.000661
       exper |   .9908518   .0168537    -0.54   0.589     .9583638    1.024441
pyperstudlep |   1.012964   .0165034     0.79   0.429      .981129    1.045832
pyperstude~s |   .9941751   .0072927    -0.80   0.426      .979984    1.008572
pyperstudw~e |   .9891837   .0345937    -0.31   0.756     .9236528    1.059364
pyperstudb~k |   .9882671   .0368041    -0.32   0.751     .9187021      1.0631
pyperstudl~o |   .9923624   .0359245    -0.21   0.832     .9243916    1.065331
pyperstudm~e |   .9748616   .0108816    -2.28   0.023     .9537656    .9964242
        male |   1.135064    .220947     0.65   0.515     .7750484    1.662309
         age |   .9901703   .0145918    -0.67   0.503     .9619799    1.019187
       Asian |   1.28e-07   .0002928    -0.01   0.994            0           .
       Black |   .9718945   .5328911    -0.05   0.959     .3318213     2.84665
      Latino |   1.430564   .9241151     0.55   0.579     .4033185    5.074183
       Other |   6.65e-07   .0012541    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   5.934788   5.210832     2.03   0.043     1.061788    33.17208
  LatinoMale |   2.148099   1.924771     0.85   0.393     .3709782    12.43827
   OtherMale |    2159515   4.07e+09     0.01   0.994            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9732998   .0119461    -2.20   0.027     .9501653    .9969975
       exper |   1.071302   .0204582     3.61   0.000     1.031946    1.112159
pyperstudlep |   1.014956   .0177297     0.85   0.395     .9807947    1.050308
pyperstude~s |   1.019526   .0071092     2.77   0.006     1.005687    1.033556
pyperstudw~e |    .996829     .03542    -0.09   0.929     .9297693    1.068725
pyperstudb~k |   .9918417   .0367344    -0.22   0.825     .9223946    1.066517
pyperstudl~o |   .9762193   .0352557    -0.67   0.505     .9095083    1.047823
pyperstudm~e |   1.006152   .0065579     0.94   0.347     .9933806    1.019088
        male |   1.879505   .3725665     3.18   0.001     1.274422    2.771875
         age |   .9666802   .0167954    -1.95   0.051     .9343161    1.000165
       Asian |   2.34e-07   .0005949    -0.01   0.995            0           .
       Black |   1.336672   .6906346     0.56   0.574      .485539    3.679811
      Latino |    .980728   .8604047    -0.02   0.982      .175703    5.474168
       Other |   2.728547    3.89964     0.70   0.482     .1657272    44.92301
   AsianMale |  (omitted)
   BlackMale |   1.700844   1.486901     0.61   0.543     .3065718    9.436191
  LatinoMale |   .3219036   .4591974    -0.79   0.427     .0196554    5.271935
   OtherMale |   1.35e-07   .0002482    -0.01   0.993            0           .
------------------------------------------------------------------------------

 -------------
---------->  region = 7

note: AsianMale omitted because of collinearity
```

```
Iteration 0:   log likelihood = -1014.8271
Iteration 1:   log likelihood = -951.33208
Iteration 2:   log likelihood = -948.51334
Iteration 3:   log likelihood = -948.32092
Iteration 4:   log likelihood = -948.29089
Iteration 5:   log likelihood = -948.28371
Iteration 6:   log likelihood = -948.28212
Iteration 7:   log likelihood = -948.28177
Iteration 8:   log likelihood = -948.28171

Multinomial logistic regression                 Number of obs   =       1006
                                                LR chi2(34)     =     133.09
                                                Prob > chi2     =     0.0000
Log likelihood = -948.28171                     Pseudo R2       =     0.0656

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.000381   .0133489     0.03   0.977      .974557     1.02689
       exper |   .9881583   .0170383    -0.69   0.490     .9553218    1.022123
pyperstudlep |   .9618835   .0234423    -1.59   0.111     .9170176    1.008945
pyperstude~s |   .9884709   .0077657    -1.48   0.140      .973367    1.003809
pyperstudw~e |   .9638203   .0834343    -0.43   0.670     .8134123     1.14204
pyperstudb~k |   .9673732   .0848336    -0.38   0.705     .8146069    1.148788
pyperstudl~o |   1.008085   .0899533     0.09   0.928     .8463362    1.200747
pyperstudm~e |   .9949351   .0081157    -0.62   0.534      .979155    1.010969
        male |   1.211596   .2489526     0.93   0.350     .8099487    1.812419
         age |   .9759048   .0145008    -1.64   0.101     .9478936    1.004744
       Asian |   3.76e-06   .0031235    -0.02   0.988            0           .
       Black |    1.16963    .405792     0.45   0.652     .5925602    2.308686
      Latino |   .3622252   .3990282    -0.92   0.357     .0418112    3.138083
       Other |   3.44e-06   .0022749    -0.02   0.985            0           .
   AsianMale |  (omitted)
   BlackMale |    4.99452   2.602594     3.09   0.002     1.798628    13.86904
  LatinoMale |   7.381173   10.75925     1.37   0.170     .4239964    128.4957
   OtherMale |   1.134885   952.8971     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9998688   .0099523    -0.01   0.989     .9805516    1.019567
       exper |   1.018532   .0141105     1.33   0.185     .9912482    1.046567
pyperstudlep |   1.050811   .0205352     2.54   0.011     1.011324    1.091841
pyperstude~s |   1.023279   .0063337     3.72   0.000      1.01094    1.035768
pyperstudw~e |   1.133465   .1123424     1.26   0.206     .9333451    1.376494
pyperstudb~k |   1.113515   .1113471     1.08   0.282     .9153336    1.354606
pyperstudl~o |   1.089378   .1102339     0.85   0.398     .8933996    1.328347
pyperstudm~e |   1.000913   .0062506     0.15   0.884     .9887366    1.013239
        male |   1.605681   .2678505     2.84   0.005     1.157889     2.22665
         age |   .9908649   .0123868    -0.73   0.463     .9668823    1.015442
       Asian |   1.774737   2.744757     0.37   0.711     .0856428     36.7771
       Black |   1.006271    .312239     0.02   0.984     .5477629    1.848574
      Latino |     .16472   .1787145    -1.66   0.096     .0196439    1.381227
       Other |   1.852461    2.31617     0.49   0.622     .1597624    21.47948
   AsianMale |  (omitted)
   BlackMale |   2.728908   1.353364     2.02   0.043     1.032398    7.213241
  LatinoMale |   18.07595   25.91272     2.02   0.043     1.088589    300.1499
   OtherMale |   1.248393   1.966916     0.14   0.888     .0569158    27.38227
------------------------------------------------------------------------------

 -------------
--------->  region = 8

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -352.29521
Iteration 1:   log likelihood = -314.39725
```

```
Iteration 2:   log likelihood = -312.54608
Iteration 3:   log likelihood = -312.41324
Iteration 4:   log likelihood =  -312.3893
Iteration 5:   log likelihood = -312.38409
Iteration 6:   log likelihood = -312.38287
Iteration 7:   log likelihood = -312.38259
Iteration 8:   log likelihood = -312.38253
Iteration 9:   log likelihood = -312.38252

Multinomial logistic regression                 Number of obs   =        348
                                                LR chi2(34)     =      79.83
                                                Prob > chi2     =     0.0000
Log likelihood = -312.38252                     Pseudo R2       =     0.1133

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.01163   .0251353     0.47   0.642     .9635464    1.062114
       exper |   .9655048    .028539    -1.19   0.235     .9111589    1.023092
pyperstudlep |   1.014917   .0501776     0.30   0.765     .9211853    1.118186
pyperstude~s |   .9871866   .0137511    -0.93   0.355     .9605996    1.014509
pyperstudw~e |   .6520553    .114898    -2.43   0.015     .4616311      .92103
pyperstudb~k |   .6829275   .1204067    -2.16   0.031     .4833921    .9648273
pyperstudl~o |   .6377573   .1155415    -2.48   0.013      .447141    .9096333
pyperstudm~e |   .9839949   .0156326    -1.02   0.310     .9538276    1.015116
        male |   2.613925   1.017162     2.47   0.014     1.219167    5.604319
         age |   1.020705    .029717     0.70   0.481     .9640913    1.080643
       Asian |   9.62e+07   7.33e+11     0.00   0.998            0           .
       Black |    4.10914   2.709664     2.14   0.032     1.128362    14.96419
      Latino |   12.24745   18.67231     1.64   0.100     .6170409    243.0956
       Other |   3.91e-07   .0006945    -0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |   .2364517   .2682513    -1.27   0.204     .0255897    2.184838
  LatinoMale |   .1519481   689.5212    -0.00   1.000            0           .
   OtherMale |    4122104   7.33e+09     0.01   0.993            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.044885   .0192143     2.39   0.017     1.007896    1.083231
       exper |   .9749516   .0218039    -1.13   0.257     .9331398    1.018637
pyperstudlep |   .9917248   .0307827    -0.27   0.789     .9331904    1.053931
pyperstude~s |    1.03222   .0114153     2.87   0.004     1.010087    1.054838
pyperstudw~e |   .9694309   .1509328    -0.20   0.842     .7144822    1.315353
pyperstudb~k |   .9428757   .1465001    -0.38   0.705     .6953417    1.278529
pyperstudl~o |   .9427496   .1477878    -0.38   0.707     .6933616    1.281837
pyperstudm~e |   .9915341   .0134494    -0.63   0.531     .9655212    1.018248
        male |   1.692117   .4716179     1.89   0.059     .9799144     2.92195
         age |   1.046906   .0233927     2.05   0.040     1.002046    1.093773
       Asian |   .3514967   4130.196    -0.00   1.000            0           .
       Black |   1.644943   .9723093     0.84   0.400     .5164329    5.239472
      Latino |   4.887475   5.963264     1.30   0.193     .4472225    53.41281
       Other |   4.46e-07   .0005453    -0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   .9102056   .8684932    -0.10   0.921     .1402641    5.906534
  LatinoMale |    2222852   5.03e+09     0.01   0.995            0           .
   OtherMale |    3127720   3.82e+09     0.01   0.990            0           .
------------------------------------------------------------------------------

 -------------
---------->  region = 9

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -225.69419
Iteration 1:   log likelihood = -204.23621
```

```
Iteration 2:   log likelihood = -202.44018
Iteration 3:   log likelihood = -202.05129
Iteration 4:   log likelihood =  -201.9672
Iteration 5:   log likelihood = -201.94849
Iteration 6:   log likelihood = -201.94478
Iteration 7:   log likelihood = -201.94394
Iteration 8:   log likelihood = -201.94373
Iteration 9:   log likelihood = -201.94369
Iteration 10:  log likelihood = -201.94368

Multinomial logistic regression                 Number of obs   =        213
                                                LR chi2(32)     =      47.50
                                                Prob > chi2     =     0.0382
Log likelihood = -201.94368                     Pseudo R2       =     0.1052

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |   .9717299   .0229988    -1.21   0.226     .9276827    1.017869
       exper |   1.008463   .0380868     0.22   0.823     .9365104    1.085944
pyperstudlep |   .9959334   .0631545    -0.06   0.949     .8795359    1.127735
pyperstude~s |   .9711087   .0147369    -1.93   0.053     .9426502    1.000426
pyperstudw~e |   .9784695   .1157407    -0.18   0.854     .7759983    1.233769
pyperstudb~k |    .994401   .1260449    -0.04   0.965     .7756537    1.274839
pyperstudl~o |   .9979583   .1208155    -0.02   0.987     .7871611    1.265206
pyperstudm~e |   .9990855   .0152689    -0.06   0.952     .9696028    1.029465
        male |   .8229176   .2871676    -0.56   0.576     .4152587    1.630775
         age |   1.025788   .0311353     0.84   0.402     .9665434    1.088663
       Asian |   6.23e-08   .0001818    -0.01   0.995            0           .
       Black |   .4247097    .536912    -0.68   0.498     .0356464    5.060217
      Latino |    4483295   8.51e+09     0.01   0.994            0           .
       Other |   2.77e-07   .0003654    -0.01   0.991            0           .
   AsianMale |  (omitted)
   BlackMale |    7603147   9.05e+09     0.01   0.989            0           .
  LatinoMale |   8.66e-14   1.99e-10    -0.01   0.990            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9961589   .0343447    -0.11   0.911     .9310686      1.0658
       exper |    .895737   .0422603    -2.33   0.020     .8166225    .9825161
pyperstudlep |   .9901205   .0714347    -0.14   0.891     .8595596    1.140513
pyperstude~s |   .9780174   .0190475    -1.14   0.254     .9413886    1.016071
pyperstudw~e |   .7772519   .1074208    -1.82   0.068     .5928171    1.019067
pyperstudb~k |   .7983623   .1170228    -1.54   0.124     .5990073    1.064064
pyperstudl~o |   .8037437   .1138449    -1.54   0.123     .6089064    1.060925
pyperstudm~e |   1.012307   .0174668     0.71   0.478     .9786452    1.047127
        male |    .588573    .259844    -1.20   0.230     .2477483    1.398266
         age |   1.061518   .0356379     1.78   0.075     .9939171    1.133716
       Asian |   1.03e-07    .000394    -0.00   0.997            0           .
       Black |    .471573   .5286212    -0.67   0.503     .0524052    4.243497
      Latino |   1.25e+07   2.38e+10     0.01   0.993            0           .
       Other |   .8505089   1.102537    -0.12   0.901     .0670261    10.79229
   AsianMale |  (omitted)
   BlackMale |   1.02e+07   1.22e+10     0.01   0.989            0           .
  LatinoMale |   1.51e-07   .0002867    -0.01   0.993            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |  (base outcome)
------------------------------------------------------------------------------

 -------------
--------->  region = 10

Iteration 0:   log likelihood = -3526.8049
Iteration 1:   log likelihood = -3351.6194
Iteration 2:   log likelihood = -3349.1013
```

```
Iteration 3:   log likelihood = -3349.0975
Iteration 4:   log likelihood = -3349.0975

Multinomial logistic regression                 Number of obs   =       3271
                                                LR chi2(36)     =     355.41
                                                Prob > chi2     =     0.0000
Log likelihood = -3349.0975                     Pseudo R2       =     0.0504

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.006857   .0063344     1.09   0.277     .9945184    1.019349
       exper |   1.002455   .0081905     0.30   0.764     .9865301    1.018638
pyperstudlep |   .9988869   .0050943    -0.22   0.827     .9889521    1.008922
pyperstude~s |   .9955369   .0036592    -1.22   0.224     .9883907    1.002735
pyperstudw~e |    .980175   .0082267    -2.39   0.017     .9641829    .9964324
pyperstudb~k |   .9819607   .0088023    -2.03   0.042     .9648592    .9993653
pyperstudl~o |   .9844863   .0085572    -1.80   0.072     .9678566    1.001402
pyperstudm~e |    .996537   .0042576    -0.81   0.417     .9882271    1.004917
        male |    1.30197   .1372901     2.50   0.012     1.058872    1.600879
         age |   .9671734   .0067465    -4.78   0.000     .9540405    .9804871
       Asian |   .9093158   .8500481    -0.10   0.919     .1455436    5.681151
       Black |   1.423972   .2100929     2.40   0.017     1.066388    1.901463
      Latino |   1.411381   .2819524     1.72   0.085     .9541116    2.087802
       Other |   .6958158    .373108    -0.68   0.499     .2432573    1.990319
   AsianMale |    1.59729   1.820509     0.41   0.681     .1710914    14.91213
   BlackMale |   1.540097   .3508401     1.90   0.058     .9854649    2.406884
  LatinoMale |   1.962339   .6349168     2.08   0.037     1.040799    3.699825
   OtherMale |   2.059917    1.45799     1.02   0.307     .5144904    8.247497
-------------+----------------------------------------------------------------
3            |
      tenure |   1.020196   .0061709     3.31   0.001     1.008172    1.032362
       exper |   1.057181   .0097953     6.00   0.000     1.038155    1.076554
pyperstudlep |   1.017923   .0058134     3.11   0.002     1.006593    1.029381
pyperstude~s |   1.015208   .0038226     4.01   0.000     1.007744    1.022728
pyperstudw~e |   1.008614   .0092932     0.93   0.352     .9905632    1.026994
pyperstudb~k |    .991605   .0098773    -0.85   0.397     .9724336    1.011154
pyperstudl~o |   .9755922   .0092984    -2.59   0.010     .9575367    .9939881
pyperstudm~e |   1.001758   .0044282     0.40   0.691     .9931162    1.010475
        male |   .9978149   .1122726    -0.02   0.984     .8003391    1.244016
         age |   .9692369   .0080788    -3.75   0.000     .9535314    .9852012
       Asian |    2.22334   1.926737     0.92   0.357     .4067788    12.15216
       Black |   1.001827   .1694498     0.01   0.991     .7191502    1.395615
      Latino |   1.767399   .3633571     2.77   0.006     1.181238    2.644429
       Other |   .3803157   .2505157    -1.47   0.142     .1045813     1.38304
   AsianMale |   .9762164   1.059567    -0.02   0.982     .1163237    8.192643
   BlackMale |   2.021177   .5198765     2.74   0.006     1.220852    3.346154
  LatinoMale |   2.289564   .7879718     2.41   0.016     1.166286    4.494699
   OtherMale |   2.106692   1.900901     0.83   0.409     .3593755    12.34962
------------------------------------------------------------------------------

 -------------
---------->  region = 11

Iteration 0:   log likelihood = -2487.1757
Iteration 1:   log likelihood = -2341.9189
Iteration 2:   log likelihood = -2339.4291
Iteration 3:   log likelihood = -2339.4258
Iteration 4:   log likelihood = -2339.4258

Multinomial logistic regression                 Number of obs   =       2294
                                                LR chi2(36)     =     295.50
                                                Prob > chi2     =     0.0000
Log likelihood = -2339.4258                     Pseudo R2       =     0.0594
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.001457   .0078424     0.19   0.853     .9862031    1.016946
       exper |   .9978954   .0097874    -0.21   0.830     .9788956    1.017264
pyperstudlep |   1.000967    .007558     0.13   0.898     .9862622     1.01589
pyperstude~s |   .9965234   .0038599    -0.90   0.369     .9889868    1.004117
pyperstudw~e |   1.003473   .0128081     0.27   0.786     .9786813    1.028893
pyperstudb~k |   1.014954   .0139669     1.08   0.281     .9879457    1.042701
pyperstudl~o |   1.014641   .0132396     1.11   0.265     .9890213    1.040925
pyperstudm~e |   .9877881   .0040914    -2.97   0.003     .9798016    .9958397
        male |   1.049876   .1223664     0.42   0.676     .8354637    1.319314
         age |   .9731366   .0081722    -3.24   0.001     .9572504    .9892863
       Asian |   .3183065   .3573171    -1.02   0.308     .0352633    2.873212
       Black |   1.481791   .3261904     1.79   0.074     .9625198    2.281204
      Latino |   2.087883   .6776925     2.27   0.023     1.105148    3.944502
       Other |   1.000618   .5818413     0.00   0.999     .3201178    3.127711
   AsianMale |   5.029374   7.328129     1.11   0.268     .2892393    87.45217
   BlackMale |   1.261733   .4316141     0.68   0.497     .6453389    2.466873
  LatinoMale |   .8244371   .3698782    -0.43   0.667     .3421934    1.986294
   OtherMale |   .5313653   .4800079    -0.70   0.484     .0904611    3.121221
-------------+----------------------------------------------------------------
3            |
      tenure |   1.004461   .0071329     0.63   0.531     .9905771    1.018539
       exper |   1.064253   .0110718     5.99   0.000     1.042772    1.086176
pyperstudlep |   1.013109   .0082651     1.60   0.110      .997039    1.029439
pyperstude~s |   1.022986   .0040592     5.73   0.000     1.015061    1.030973
pyperstudw~e |   1.028062   .0143294     1.99   0.047     1.000357    1.056534
pyperstudb~k |   1.015209   .0153176     1.00   0.317     .9856266    1.045679
pyperstudl~o |   1.000365   .0144645     0.03   0.980     .9724132     1.02912
pyperstudm~e |   .9951228   .0038046    -1.28   0.201     .9876938    1.002608
        male |   1.277765   .1526688     2.05   0.040     1.010994     1.61493
         age |   .9833171   .0093115    -1.78   0.076     .9652353    1.001738
       Asian |   1.068663   .9507186     0.07   0.940     .1868888    6.110804
       Black |   1.297586   .3366009     1.00   0.315     .7804227    2.157459
      Latino |   3.457764   1.132279     3.79   0.000     1.819956    6.569462
       Other |   .5993711    .415366    -0.74   0.460     .1541028    2.331209
   AsianMale |   1.054645   1.613807     0.03   0.972      .052554    21.16442
   BlackMale |   1.028696   .4181654     0.07   0.945     .4637389    2.281923
  LatinoMale |   .4503525   .2190217    -1.64   0.101     .1736138     1.16821
   OtherMale |   1.590135    1.51535     0.49   0.626     .2456209    10.29444
------------------------------------------------------------------------------

 -------------
---------->  region = 12

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -889.00032
Iteration 1:   log likelihood = -833.64968
Iteration 2:   log likelihood = -831.67391
Iteration 3:   log likelihood = -831.49892
Iteration 4:   log likelihood = -831.46799
Iteration 5:   log likelihood = -831.46122
Iteration 6:   log likelihood =  -831.4596
Iteration 7:   log likelihood = -831.45925
Iteration 8:   log likelihood = -831.45918
Iteration 9:   log likelihood = -831.45916

Multinomial logistic regression                 Number of obs   =        830
                                                LR chi2(32)     =     115.08
                                                Prob > chi2     =     0.0000
Log likelihood = -831.45916                     Pseudo R2       =     0.0647
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9975952   .0126636    -0.19   0.850     .9730812    1.022727
       exper |   .9964822   .0165735    -0.21   0.832     .9645225    1.029501
pyperstudlep |    1.01007   .0244144     0.41   0.678     .9633341    1.059072
pyperstude~s |   .9869882   .0075482    -1.71   0.087     .9723043    1.001894
pyperstudw~e |   .8940907    .043196    -2.32   0.020     .8133129    .9828912
pyperstudb~k |   .9251004    .047763    -1.51   0.132     .8360674    1.023615
pyperstudl~o |   .9140627   .0442155    -1.86   0.063     .8313831    1.004965
pyperstudm~e |   .9914212   .0079555    -1.07   0.283     .9759507    1.007137
        male |   .9663085    .203659    -0.16   0.871     .6393176    1.460545
         age |   .9696748   .0144609    -2.06   0.039     .9417422    .9984358
       Asian |  (omitted)
       Black |   1.160639   .4039802     0.43   0.669     .5867083    2.296003
      Latino |   1.795677   1.237494     0.85   0.396     .4651802     6.93163
       Other |   .1698365   .2048216    -1.47   0.142     .0159767    1.805403
   AsianMale |  (omitted)
   BlackMale |   1.060442   .6584643     0.09   0.925     .3140126    3.581185
  LatinoMale |   .5507203   .5041341    -0.65   0.515     .0915659     3.31229
   OtherMale |   6.95e-06   .0057563    -0.01   0.989            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.004123   .0108244     0.38   0.703     .9831303    1.025565
       exper |   1.026511   .0157423     1.71   0.088     .9961154    1.057833
pyperstudlep |   1.081128   .0238767     3.53   0.000     1.035329    1.128953
pyperstude~s |     .99983   .0065854    -0.03   0.979     .9870058    1.012821
pyperstudw~e |   1.037053   .0528999     0.71   0.476     .9383855    1.146095
pyperstudb~k |   1.041394   .0563983     0.75   0.454     .9365194    1.158012
pyperstudl~o |   1.013925   .0517804     0.27   0.787     .9173507    1.120665
pyperstudm~e |   1.007592   .0067838     1.12   0.261     .9943832    1.020976
        male |    1.36563   .2521539     1.69   0.091     .9509654    1.961108
         age |   .9852252   .0137759    -1.06   0.287     .9585915    1.012599
       Asian |  (omitted)
       Black |   .9253847   .3562598    -0.20   0.840      .435133    1.967989
      Latino |   .7140907   .5914615    -0.41   0.684     .1408403    3.620595
       Other |   1.55e-06   .0008773    -0.02   0.981            0           .
   AsianMale |  (omitted)
   BlackMale |   1.517517   .9278584     0.68   0.495     .4578062    5.030202
  LatinoMale |   .2789198   .3825163    -0.93   0.352     .0189725    4.100477
   OtherMale |    1170521   6.62e+08     0.02   0.980            0           .
------------------------------------------------------------------------------

 -------------
--------->  region = 13

Iteration 0:   log likelihood =  -1529.011
Iteration 1:   log likelihood = -1461.5737
Iteration 2:   log likelihood = -1460.0747
Iteration 3:   log likelihood = -1459.8424
Iteration 4:   log likelihood = -1459.8049
Iteration 5:   log likelihood = -1459.7962
Iteration 6:   log likelihood = -1459.7942
Iteration 7:   log likelihood = -1459.7938
Iteration 8:   log likelihood = -1459.7937
Iteration 9:   log likelihood = -1459.7937

Multinomial logistic regression                 Number of obs   =       1416
                                                LR chi2(36)     =     138.43
                                                Prob > chi2     =     0.0000
Log likelihood = -1459.7937                     Pseudo R2       =     0.0453

------------------------------------------------------------------------------
```

```
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.022866   .0105318     2.20   0.028     1.002431    1.043717
       exper |   .9649718    .011352    -3.03   0.002     .9429768    .9874798
pyperstudlep |    .991304   .0088996    -0.97   0.331     .9740137    1.008901
pyperstude~s |   .9922406   .0068462    -1.13   0.259     .9789126     1.00575
pyperstudw~e |    .969606    .021069    -1.42   0.155     .9291785    1.011792
pyperstudb~k |   .9813051   .0244376    -0.76   0.449     .9345584     1.03039
pyperstudl~o |   .9884388   .0224153    -0.51   0.608     .9454677    1.033363
pyperstudm~e |   .9849802   .0065403    -2.28   0.023     .9722444    .9978827
        male |   1.073916   .1727757     0.44   0.658     .7834764    1.472024
         age |   .9937311   .0102043    -0.61   0.540      .973931    1.013934
       Asian |    .565698   .6742439    -0.48   0.633     .0547085    5.849441
       Black |   2.099293   .6230872     2.50   0.012     1.173355    3.755922
      Latino |   1.130171   .2641461     0.52   0.601     .7148247    1.786853
       Other |   2.950178   3.660935     0.87   0.383     .2591645    33.58312
   AsianMale |   1.946492   3.619127     0.36   0.720      .050887    74.45572
   BlackMale |   1.080823   .5368609     0.16   0.876     .4082724    2.861272
  LatinoMale |   2.050318   .7935904     1.86   0.064     .9601905    4.378092
   OtherMale |   .4618793   .6645229    -0.54   0.591     .0275343    7.747894
-------------+----------------------------------------------------------------
3            |
      tenure |   1.020443   .0096571     2.14   0.032      1.00169    1.039548
       exper |    1.00671   .0118218     0.57   0.569     .9838042    1.030149
pyperstudlep |   1.000589   .0086359     0.07   0.946     .9838051    1.017659
pyperstude~s |   1.028461    .006792     4.25   0.000     1.015235     1.04186
pyperstudw~e |   .9537683   .0210283    -2.15   0.032     .9134313    .9958866
pyperstudb~k |   .9254497   .0238402    -3.01   0.003     .8798837    .9733754
pyperstudl~o |   .9376338   .0214727    -2.81   0.005     .8964785    .9806783
pyperstudm~e |   .9939749   .0058531    -1.03   0.305     .9825689    1.005513
        male |   1.062489   .1662135     0.39   0.698     .7819233    1.443725
         age |   1.003701   .0108146     0.34   0.732      .982727    1.025123
       Asian |   .8855153   1.035577    -0.10   0.917     .0894844     8.76284
       Black |   .8207343     .30226    -0.54   0.592     .3987697    1.689208
      Latino |   .9951354    .239373    -0.02   0.984      .621057    1.594531
       Other |   4.270006   5.055452     1.23   0.220     .4194234    43.47147
   AsianMale |   7.60e-07   .0014451    -0.01   0.994            0           .
   BlackMale |   2.702901   1.506769     1.78   0.074     .9063925    8.060167
  LatinoMale |   1.433641   .6015655     0.86   0.391     .6298982    3.262949
   OtherMale |   1.42e-07   .0001342    -0.02   0.987            0           .
------------------------------------------------------------------------------

 -------------
--------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -261.48627
Iteration 1:   log likelihood = -232.28337
Iteration 2:   log likelihood = -228.56359
Iteration 3:   log likelihood = -228.28928
Iteration 4:   log likelihood = -228.24515
Iteration 5:   log likelihood = -228.23797
Iteration 6:   log likelihood = -228.23627
Iteration 7:   log likelihood =  -228.2359
Iteration 8:   log likelihood = -228.23581
Iteration 9:   log likelihood =  -228.2358

Multinomial logistic regression                 Number of obs   =        278
                                                LR chi2(30)     =      66.50
                                                Prob > chi2     =     0.0001
Log likelihood =  -228.2358                     Pseudo R2       =     0.1272
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9875852   .0312597    -0.39   0.693     .9281792    1.050793
       exper |   1.019347   .0428932     0.46   0.649     .9386513     1.10698
pyperstudlep |   1.028513    .084173     0.34   0.731     .8760886    1.207457
pyperstude~s |    .985528   .0193397    -0.74   0.458     .9483425    1.024172
pyperstudw~e |   .7615601   .2024304    -1.02   0.305     .4523204    1.282219
pyperstudb~k |   .7738612   .2261476    -0.88   0.380     .4364294    1.372183
pyperstudl~o |   .7772752   .2056647    -0.95   0.341     .4627533     1.30557
pyperstudm~e |   .9672464   .0380618    -0.85   0.397     .8954509    1.044798
        male |   4.498105   2.510147     2.69   0.007     1.506678    13.42885
         age |   1.007962   .0394495     0.20   0.839     .9335331    1.088324
       Asian |  (omitted)
       Black |   7.89e-06    .012457    -0.01   0.994            0           .
      Latino |   7.020514   9.399715     1.46   0.146     .5089807    96.83592
       Other |   5.09e-07   .0015952    -0.00   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   126114.1   4.08e+08     0.00   0.997            0           .
  LatinoMale |   .4615015   .7028681    -0.51   0.612     .0233233     9.13178
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |    1.02424   .0207388     1.18   0.237     .9843887    1.065705
       exper |   1.066085   .0330166     2.07   0.039     1.003298      1.1328
pyperstudlep |   1.008247   .0473293     0.17   0.861     .9196227    1.105412
pyperstude~s |   1.029449   .0133147     2.24   0.025     1.003681    1.055879
pyperstudw~e |   1.012618   .2065665     0.06   0.951     .6789015    1.510373
pyperstudb~k |   .9112104   .2066761    -0.41   0.682     .5841891    1.421294
pyperstudl~o |   1.015615   .2067714     0.08   0.939     .6814451    1.513656
pyperstudm~e |   .9958526   .0176956    -0.23   0.815     .9617668    1.031146
        male |   1.814387   .5544638     1.95   0.051     .9968019    3.302563
         age |   .9548267   .0262162    -1.68   0.092     .9048019    1.007617
       Asian |  (omitted)
       Black |   8.199656   10.72962     1.61   0.108     .6308992    106.5691
      Latino |   2.207259    2.22603     0.79   0.432     .3057827    15.93286
       Other |   2.01e-07   .0003365    -0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |   654200.8   7.52e+08     0.01   0.991            0           .
  LatinoMale |   .3521912   .4776981    -0.77   0.442     .0246742    5.027063
   OtherMale |  (omitted)
------------------------------------------------------------------------------

 -------------
---------->  region = 15

note: Asian omitted because of collinearity
note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -294.19477
Iteration 1:   log likelihood = -264.61151
Iteration 2:   log likelihood = -261.60194
Iteration 3:   log likelihood = -261.46775
Iteration 4:   log likelihood = -261.44025
Iteration 5:   log likelihood = -261.43398
Iteration 6:   log likelihood = -261.43243
Iteration 7:   log likelihood = -261.43213
Iteration 8:   log likelihood = -261.43208
Iteration 9:   log likelihood = -261.43207

Multinomial logistic regression                 Number of obs   =        289
                                                LR chi2(28)     =      65.53
                                                Prob > chi2     =     0.0001
```

```
Log likelihood = -261.43207                     Pseudo R2       =     0.1114

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.014312   .0301813     0.48   0.633     .9568493    1.075225
       exper |   .9788114     .04046    -0.52   0.604     .9026386    1.061412
pyperstudlep |   1.011486   .0354741     0.33   0.745     .9442934    1.083459
pyperstude~s |   .9962077   .0157352    -0.24   0.810     .9658398     1.02753
pyperstudw~e |   .6964715   .2122369    -1.19   0.235     .3832792    1.265585
pyperstudb~k |   .7303746   .2286588    -1.00   0.316     .3954208    1.349062
pyperstudl~o |   .7053947   .2143856    -1.15   0.251     .3888057     1.27977
pyperstudm~e |   1.012403   .0203909     0.61   0.541     .9732157    1.053167
        male |    1.69971   .8466928     1.06   0.287     .6402619    4.512238
         age |    1.04347   .0356735     1.24   0.213     .9758419    1.115784
       Asian |  (omitted)
       Black |   8.97e+07   3.07e+11     0.01   0.996            0           .
      Latino |   5.974153   3.627444     2.94   0.003     1.817337     19.6389
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |    .040668   142.1374    -0.00   0.999            0           .
  LatinoMale |   .1683355   .1413523    -2.12   0.034     .0324651    .8728398
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9755037    .020305    -1.19   0.233     .9365074    1.016124
       exper |   1.047912   .0317692     1.54   0.123     .9874598    1.112066
pyperstudlep |   1.043103   .0301208     1.46   0.144     .9857072    1.103842
pyperstude~s |   1.020592   .0112164     1.85   0.064     .9988436    1.042814
pyperstudw~e |   .9719832   .1993275    -0.14   0.890     .6502799    1.452838
pyperstudb~k |    .905708   .1968048    -0.46   0.649     .5915988    1.386593
pyperstudl~o |    .949298   .1945475    -0.25   0.800     .6352706    1.418556
pyperstudm~e |   1.000528   .0184836     0.03   0.977     .9649485    1.037419
        male |   1.054389   .3307397     0.17   0.866     .5701598    1.949867
         age |   .9723165   .0265306    -1.03   0.304     .9216835    1.025731
       Asian |  (omitted)
       Black |   2.272011   11768.79     0.00   1.000            0           .
      Latino |   .6040457   .3954614    -0.77   0.441     .1674166    2.179421
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   958970.3   5.01e+09     0.00   0.998            0           .
  LatinoMale |   1.335464   1.106412     0.35   0.727     .2632839    6.773918
   OtherMale |  (omitted)
------------------------------------------------------------------------------

 -------------
---------->  region = 16

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -505.59462
Iteration 1:   log likelihood = -455.07091
Iteration 2:   log likelihood = -452.28084
Iteration 3:   log likelihood = -452.11946
Iteration 4:   log likelihood = -452.08298
Iteration 5:   log likelihood = -452.07548
Iteration 6:   log likelihood = -452.07391
Iteration 7:   log likelihood = -452.07356
Iteration 8:   log likelihood = -452.07347
Iteration 9:   log likelihood = -452.07345

Multinomial logistic regression                 Number of obs   =        471
                                                LR chi2(32)     =     107.04
                                                Prob > chi2     =     0.0000
```

```
Log likelihood = -452.07345                     Pseudo R2       =     0.1059

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.071209   .0237824     3.10   0.002     1.025596     1.11885
       exper |   .9033134   .0254951    -3.60   0.000      .854701    .9546908
pyperstudlep |   1.018087   .0193199     0.94   0.345     .9809163    1.056666
pyperstude~s |   .9756227   .0087005    -2.77   0.006     .9587181    .9928254
pyperstudw~e |   .9572241   .0315833    -1.32   0.185      .897281    1.021172
pyperstudb~k |   1.003459   .0377806     0.09   0.927     .9320763    1.080308
pyperstudl~o |   .9715308   .0311533    -0.90   0.368     .9123507     1.03455
pyperstudm~e |   1.030165    .014685     2.08   0.037     1.001781    1.059353
        male |   1.171778   .3308582     0.56   0.575     .6737577    2.037919
         age |   1.011167   .0226316     0.50   0.620     .9677689    1.056512
       Asian |  (omitted)
       Black |    .677422   .7011911    -0.38   0.707     .0890822    5.151426
      Latino |   3.475713   2.061189     2.10   0.036     1.087074    11.11294
       Other |   1.259786   1.338011     0.22   0.828     .1571235    10.10072
   AsianMale |  (omitted)
   BlackMale |   3.99e-07   .0002865    -0.02   0.984            0           .
  LatinoMale |   .5128455   .4747044    -0.72   0.471     .0835777      3.1469
   OtherMale |    2589873   2.42e+09     0.02   0.987            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.036412   .0162531     2.28   0.023     1.005041    1.068762
       exper |   1.037208   .0248519     1.52   0.127     .9896248    1.087078
pyperstudlep |   1.046976   .0181733     2.64   0.008     1.011956    1.083208
pyperstude~s |   1.008068   .0073835     1.10   0.273     .9937004    1.022644
pyperstudw~e |   1.052188   .0403709     1.33   0.185     .9759639    1.134364
pyperstudb~k |   1.041294   .0442176     0.95   0.341      .958138    1.131668
pyperstudl~o |   1.035043   .0387752     0.92   0.358     .9617676      1.1139
pyperstudm~e |    1.01657   .0144974     1.15   0.249     .9885488    1.045385
        male |     1.9121    .475277     2.61   0.009     1.174718    3.112345
         age |   .9769412    .021962    -1.04   0.299      .934831    1.020948
       Asian |  (omitted)
       Black |    .476592   .5834814    -0.61   0.545     .0432553    5.251153
      Latino |   .8046079   .6358653    -0.28   0.783      .170961    3.786793
       Other |   .5147164    .615249    -0.56   0.578     .0494439    5.358254
   AsianMale |  (omitted)
   BlackMale |   .9917383   1.780691    -0.00   0.996     .0293794    33.47735
  LatinoMale |   .4545784    .531986    -0.67   0.501     .0458628    4.505642
   OtherMale |   427042.1   4.00e+08     0.01   0.989            0           .
------------------------------------------------------------------------------

 -------------
---------->  region = 17

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -465.45976
Iteration 1:   log likelihood =  -420.8015
Iteration 2:   log likelihood = -419.30721
Iteration 3:   log likelihood = -419.15785
Iteration 4:   log likelihood = -419.13102
Iteration 5:   log likelihood = -419.12579
Iteration 6:   log likelihood = -419.12466
Iteration 7:   log likelihood =  -419.1244
Iteration 8:   log likelihood = -419.12434
Iteration 9:   log likelihood = -419.12432

Multinomial logistic regression                 Number of obs   =        458
                                                LR chi2(32)     =      92.67
                                                Prob > chi2     =     0.0000
```

```
Log likelihood = -419.12432                     Pseudo R2       =     0.0995

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |     1.0338   .0237811     1.45   0.148     .9882245    1.081476
       exper |   .9993742   .0299924    -0.02   0.983     .9422856    1.059922
pyperstudlep |   .9894275   .0399028    -0.26   0.792     .9142305     1.07081
pyperstude~s |   .9741058   .0111687    -2.29   0.022     .9524596    .9962438
pyperstudw~e |   1.093208   .1681729     0.58   0.562     .8086462    1.477906
pyperstudb~k |   1.106901   .1698377     0.66   0.508     .8194156    1.495247
pyperstudl~o |   1.117347   .1710114     0.72   0.468     .8277719    1.508223
pyperstudm~e |   .9930112   .0107792    -0.65   0.518     .9721075    1.014364
        male |   1.756175   .5507263     1.80   0.073     .9498086     3.24713
         age |   .9758759   .0256926    -0.93   0.354     .9267966    1.027554
       Asian |   3.81e-07   .0013325    -0.00   0.997            0           .
       Black |   2.834898   2.859855     1.03   0.302     .3925027     20.4754
      Latino |   .5066064    .550584    -0.63   0.532     .0601974    4.263473
       Other |   1.02e+07   1.94e+10     0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |    4169646   7.88e+09     0.01   0.994            0           .
  LatinoMale |   9.806516   12.94197     1.73   0.084     .7381707    130.2785
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.007066   .0158694     0.45   0.655     .9764381    1.038655
       exper |   1.072553    .025689     2.92   0.003     1.023367    1.124103
pyperstudlep |   1.023682   .0256424     0.93   0.350     .9746376    1.075194
pyperstude~s |   1.022213   .0091744     2.45   0.014     1.004388    1.040353
pyperstudw~e |    1.21936   .1589895     1.52   0.128     .9443777    1.574411
pyperstudb~k |   1.171541   .1536012     1.21   0.227     .9060583    1.514812
pyperstudl~o |   1.200981     .15662     1.40   0.160      .930103    1.550749
pyperstudm~e |   .9989556   .0089971    -0.12   0.908     .9814764    1.016746
        male |   2.626215   .6469991     3.92   0.000     1.620416    4.256316
         age |   .9493319   .0212408    -2.32   0.020     .9086004    .9918893
       Asian |   5.30e-07   .0011817    -0.01   0.995            0           .
       Black |   2.412786   2.397155     0.89   0.375     .3442167    16.91242
      Latino |    1.65561    .930897     0.90   0.370     .5499897    4.983812
       Other |    2746423   5.22e+09     0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |    4618081   8.72e+09     0.01   0.994            0           .
  LatinoMale |   1.845305   1.652089     0.68   0.494     .3191489    10.66948
   OtherMale |  (omitted)
------------------------------------------------------------------------------

 -------------
--------->  region = 18

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -418.50231
Iteration 1:   log likelihood = -381.64399
Iteration 2:   log likelihood = -380.30382
Iteration 3:   log likelihood =  -380.2554
Iteration 4:   log likelihood = -380.24387
Iteration 5:   log likelihood = -380.24151
Iteration 6:   log likelihood = -380.24101
Iteration 7:   log likelihood =  -380.2409
Iteration 8:   log likelihood = -380.24087

Multinomial logistic regression                 Number of obs   =        399
                                                LR chi2(32)     =      76.52
                                                Prob > chi2     =     0.0000
Log likelihood = -380.24087                     Pseudo R2       =     0.0914
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9963511     .02283    -0.16   0.873     .9525951    1.042117
       exper |   .9665208   .0256833    -1.28   0.200     .9174709    1.018193
pyperstudlep |   1.030483   .0191613     1.61   0.106     .9936033    1.068731
pyperstude~s |   .9742643   .0143713    -1.77   0.077     .9465002    1.002843
pyperstudw~e |   .7780815   .1188343    -1.64   0.100     .5767974    1.049607
pyperstudb~k |   .8570974   .1366572    -0.97   0.333     .6270657    1.171514
pyperstudl~o |   .7843441   .1196275    -1.59   0.111     .5816772    1.057624
pyperstudm~e |   1.009285    .011461     0.81   0.416     .9870695       1.032
        male |   .9911541   .3456375    -0.03   0.980     .5003895    1.963243
         age |   .9971862   .0230154    -0.12   0.903     .9530819    1.043331
       Asian |  (omitted)
       Black |   2.654166   2.955085     0.88   0.381     .2993785    23.53073
      Latino |   4.197584   2.043197     2.95   0.003      1.61686    10.89749
       Other |   8.93e-06   .0039272    -0.03   0.979            0           .
   AsianMale |  (omitted)
   BlackMale |   .2527312   .4300425    -0.81   0.419     .0090006    7.096544
  LatinoMale |   .7279074   .4695263    -0.49   0.622     .2055988    2.577102
   OtherMale |   5.61e+11   7.04e+14     0.02   0.983            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.018262   .0176117     1.05   0.295     .9843224    1.053372
       exper |   1.038711   .0254753     1.55   0.121     .9899618    1.089862
pyperstudlep |   1.002888   .0161869     0.18   0.858     .9716591    1.035121
pyperstude~s |   1.036654   .0125162     2.98   0.003      1.01241    1.061477
pyperstudw~e |   1.064441   .1744348     0.38   0.703      .772025    1.467614
pyperstudb~k |   1.073819    .184718     0.41   0.679     .7664916    1.504369
pyperstudl~o |   1.034121   .1691568     0.21   0.837     .7504742    1.424974
pyperstudm~e |   1.002747   .0113296     0.24   0.808     .9807856      1.0252
        male |   1.831387   .5203103     2.13   0.033     1.049416    3.196043
         age |   .9628247   .0220383    -1.66   0.098     .9205849    1.007002
       Asian |  (omitted)
       Black |   2.459837   2.407289     0.92   0.358     .3613173     16.7465
      Latino |   2.046116   .9503714     1.54   0.123      .823318    5.085021
       Other |   1.611978   2.582797     0.30   0.766      .069746    37.25626
   AsianMale |  (omitted)
   BlackMale |   .7425833   1.017036    -0.22   0.828     .0506928    10.87788
  LatinoMale |   .4379331   .2716843    -1.33   0.183     .1298197    1.477321
   OtherMale |   .5730888   1051.176    -0.00   1.000            0           .
------------------------------------------------------------------------------

 -------------
---------->  region = 19

Iteration 0:   log likelihood = -820.33352
Iteration 1:   log likelihood = -754.46344
Iteration 2:   log likelihood = -752.40515
Iteration 3:   log likelihood = -752.27692
Iteration 4:   log likelihood = -752.26297
Iteration 5:   log likelihood = -752.26088
Iteration 6:   log likelihood =  -752.2605
Iteration 7:   log likelihood = -752.26042
Iteration 8:   log likelihood =  -752.2604

Multinomial logistic regression                 Number of obs   =        759
                                                LR chi2(36)     =     136.15
                                                Prob > chi2     =     0.0000
Log likelihood =  -752.2604                     Pseudo R2       =     0.0830

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
```

```
-------------+------------------------------------------------------------------
1            |  (base outcome)
-------------+------------------------------------------------------------------
2            |
      tenure |   1.040046   .0138083     2.96   0.003     1.013331    1.067465
       exper |   1.024606   .0184028     1.35   0.176     .9891643    1.061317
pyperstudlep |   1.016097   .0058458     2.78   0.006     1.004704    1.027619
pyperstude~s |   .9893414   .0093426    -1.13   0.256     .9711986    1.007823
pyperstudw~e |   .9185062   .0862351    -0.91   0.365     .7641278    1.104074
pyperstudb~k |   .9718579    .101814    -0.27   0.785       .79146    1.193374
pyperstudl~o |   .9325544   .0839352    -0.78   0.438      .781738    1.112467
pyperstudm~e |   .9907235   .0069673    -1.33   0.185     .9771615    1.004474
        male |   1.806708   .5271594     2.03   0.043     1.019824    3.200742
         age |   .9773198   .0148482    -1.51   0.131      .948647    1.006859
       Asian |    2637716   4.20e+09     0.01   0.993           0           .
       Black |   1.278046   .9061434     0.35   0.729     .3184482    5.129254
      Latino |   1.462617    .378235     1.47   0.141     .8810661    2.428022
       Other |   2.329291   3.400249     0.58   0.562     .1332471     40.7183
   AsianMale |   8.69e-08    .000337    -0.00   0.997           0           .
   BlackMale |   .8754978   .9032472    -0.13   0.897     .1158975    6.613569
  LatinoMale |   .7223895   .2651661    -0.89   0.376     .3518216    1.483271
   OtherMale |   .8273061   1.715311    -0.09   0.927     .0142171    48.14173
-------------+------------------------------------------------------------------
3            |
      tenure |    1.05019   .0146728     3.51   0.000     1.021822    1.079346
       exper |   1.083481   .0229543     3.78   0.000     1.039413    1.129418
pyperstudlep |   1.026313   .0067101     3.97   0.000     1.013246    1.039549
pyperstude~s |   1.001446   .0109942     0.13   0.895     .9801277    1.023228
pyperstudw~e |   .9273707   .1016351    -0.69   0.491      .748111    1.149584
pyperstudb~k |   1.025057   .1238583     0.20   0.838     .8089036     1.29897
pyperstudl~o |   .9367999   .0975013    -0.63   0.530     .7639316    1.148786
pyperstudm~e |   .9958431   .0070046    -0.59   0.554     .9822085    1.009667
        male |   1.375611   .4471515     0.98   0.327     .7274559    2.601263
         age |   .9792974   .0184943    -1.11   0.268     .9437119    1.016225
       Asian |   .4275916    1097.47    -0.00   1.000           0           .
       Black |    .745205    .661748    -0.33   0.741      .130738    4.247659
      Latino |   1.127871   .3188255     0.43   0.670     .6481007    1.962801
       Other |   3.67e-06   .0032294    -0.01   0.989           0           .
   AsianMale |    1470073   5.17e+09     0.00   0.997           0           .
   BlackMale |   3.238991   3.783511     1.01   0.314     .3281779    31.96761
  LatinoMale |   .6510554   .2746364    -1.02   0.309     .2848088    1.488273
   OtherMale |   1.555994   1898.319     0.00   1.000           0           .
------------------------------------------------------------------------------

 -------------
---------->  region = 20

Iteration 0:   log likelihood = -2194.6547
Iteration 1:   log likelihood = -2076.0297
Iteration 2:   log likelihood = -2072.3685
Iteration 3:   log likelihood = -2072.0403
Iteration 4:   log likelihood = -2071.9628
Iteration 5:   log likelihood = -2071.9477
Iteration 6:   log likelihood = -2071.9451
Iteration 7:   log likelihood = -2071.9445
Iteration 8:   log likelihood = -2071.9444
Iteration 9:   log likelihood = -2071.9444

Multinomial logistic regression                 Number of obs   =       2157
                                                LR chi2(36)     =     245.42
                                                Prob > chi2     =     0.0000
Log likelihood = -2071.9444                     Pseudo R2       =     0.0559

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
```

```
-------------+----------------------------------------------------------------
2            |
      tenure |   1.003106   .0080129     0.39   0.698     .9875228    1.018934
       exper |   1.003659   .0102166     0.36   0.720     .9838334    1.023884
pyperstudlep |   .9871041   .0073578    -1.74   0.082     .9727879    1.001631
pyperstude~s |   1.006018   .0047679     1.27   0.206     .9967161    1.015406
pyperstudw~e |   .9891658   .0426228    -0.25   0.800      .909057    1.076334
pyperstudb~k |   .9781763   .0441749    -0.49   0.625     .8953163    1.068705
pyperstudl~o |   .9822347   .0425042    -0.41   0.679     .9023629    1.069176
pyperstudm~e |   .9981993   .0039988    -0.45   0.653     .9903924    1.006068
        male |    1.58095   .2274386     3.18   0.001     1.192511    2.095915
         age |   .9621061   .0084061    -4.42   0.000     .9457707    .9787237
       Asian |   .3797772   .4202899    -0.87   0.382     .0434036    3.323015
       Black |   1.728924   .4996148     1.89   0.058     .9812974    3.046151
      Latino |   1.331097   .2126349     1.79   0.073     .9732748    1.820473
       Other |   2.540834   2.131639     1.11   0.266     .4907481    13.15509
   AsianMale |   5.31e+07   2.10e+11     0.00   0.996            0           .
   BlackMale |   .9490566   .4228584    -0.12   0.907     .3963087    2.272744
  LatinoMale |   1.187803   .2784153     0.73   0.463     .7502862    1.880451
   OtherMale |   1.44e-07   .0002175    -0.01   0.992            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.017406   .0078331     2.24   0.025     1.002169    1.032875
       exper |   1.065453   .0126382     5.34   0.000     1.040969    1.090514
pyperstudlep |   1.023945   .0067331     3.60   0.000     1.010833    1.037227
pyperstude~s |   1.023718   .0055303     4.34   0.000     1.012936    1.034615
pyperstudw~e |   1.086413   .0532467     1.69   0.091     .9869071    1.195951
pyperstudb~k |   1.044012   .0539326     0.83   0.404     .9434811    1.155254
pyperstudl~o |   1.049364   .0519628     0.97   0.331     .9523052    1.156316
pyperstudm~e |   1.009318    .003892     2.41   0.016     1.001719    1.016975
        male |   1.512143    .234034     2.67   0.008     1.116484    2.048015
         age |   .9581479   .0103984    -3.94   0.000     .9379827    .9787466
       Asian |   4.20e-07   .0004978    -0.01   0.990            0           .
       Black |   1.595387   .4890556     1.52   0.128     .8748547    2.909353
      Latino |   1.145728   .1895822     0.82   0.411     .8283891    1.584633
       Other |   7.70e-07   .0009419    -0.01   0.991            0           .
   AsianMale |    2775308   2.06e+10     0.00   0.998            0           .
   BlackMale |   .8679664   .4414368    -0.28   0.781     .3203263     2.35187
  LatinoMale |   .9584563   .2448772    -0.17   0.868     .5808951    1.581419
   OtherMale |    4200690   5.14e+09     0.01   0.990            0           .
------------------------------------------------------------------------------
by pyschooltype:
. bysort pyschooltype: mlogit admin  tenure exper  pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile male age
>  Asian Black Latino Other AsianMale BlackMale LatinoMale OtherMale if
validcert2003a==1, rrr iter(20)

 -------------
---------->  pyschooltype =

Iteration 0:   log likelihood = -552.33627
Iteration 1:   log likelihood = -488.41841
Iteration 2:   log likelihood = -486.78646
Iteration 3:   log likelihood = -486.68821
Iteration 4:   log likelihood = -486.66589
Iteration 5:   log likelihood = -486.66132
Iteration 6:   log likelihood = -486.66058
Iteration 7:   log likelihood =  -486.6604
Iteration 8:   log likelihood = -486.66036
Iteration 9:   log likelihood = -486.66035

Multinomial logistic regression                 Number of obs   =        516
                                                LR chi2(36)     =     131.35
                                                Prob > chi2     =     0.0000
Log likelihood = -486.66035                     Pseudo R2       =     0.1189

------------------------------------------------------------------------------
```

```
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9976778    .017671    -0.13   0.896     .9636375     1.03292
       exper |   1.040833   .0250525     1.66   0.096     .9928707    1.091111
pyperstudlep |   .9948479   .0100008    -0.51   0.607     .9754386    1.014643
pyperstude~s |   .9972728   .0097909    -0.28   0.781     .9782664    1.016649
pyperstudw~e |   .9675624   .0258231    -1.24   0.217      .918251    1.019522
pyperstudb~k |    .949902   .0278239    -1.75   0.079     .8969041    1.006032
pyperstudl~o |   .9720498   .0269324    -1.02   0.306      .920671    1.026296
pyperstudm~e |   .9572366   .0170059    -2.46   0.014     .9244793    .9911546
        male |   1.595649   .5019943     1.49   0.137     .8612863    2.956154
         age |    .927454   .0196881    -3.55   0.000     .8896577    .9668561
       Asian |   1.27e-06   .0010198    -0.02   0.987            0           .
       Black |   2.059483   .8794491     1.69   0.091     .8918149       4.756
      Latino |   .9957879   .4247187    -0.01   0.992     .4316347    2.297298
       Other |   .8046872   1.185598    -0.15   0.883     .0448226    14.44633
   AsianMale |   5.13e+13   1.39e+17     0.01   0.991            0           .
   BlackMale |    1.01704   .7353624     0.02   0.981     .2465379    4.195583
  LatinoMale |   1.468232   .8986422     0.63   0.530     .4423951    4.872804
   OtherMale |    5350740   1.39e+10     0.01   0.995            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.017615   .0159543     1.11   0.265     .9868205     1.04937
       exper |   1.058228   .0233182     2.57   0.010     1.013498    1.104932
pyperstudlep |   1.015499   .0108448     1.44   0.150     .9944642    1.036978
pyperstude~s |   1.019616   .0095818     2.07   0.039     1.001008     1.03857
pyperstudw~e |   1.011757   .0292756     0.40   0.686     .9559749    1.070795
pyperstudb~k |   .9637974   .0309436    -1.15   0.251     .9050179    1.026395
pyperstudl~o |   .9793978   .0292924    -0.70   0.486     .9236361    1.038526
pyperstudm~e |   .9839357   .0105585    -1.51   0.131     .9634575    1.004849
        male |   2.095865   .6199999     2.50   0.012     1.173709    3.742538
         age |   .9803881   .0200457    -0.97   0.333     .9418761    1.020475
       Asian |   .7743059   .9378752    -0.21   0.833     .0720938    8.316245
       Black |   1.489716   .6968596     0.85   0.394     .5955641    3.726307
      Latino |   .4400905    .222586    -1.62   0.105     .1633154    1.185924
       Other |   .9770188   1.482271    -0.02   0.988     .0499475    19.11138
   AsianMale |   3.797635   15861.66     0.00   1.000            0           .
   BlackMale |   1.174943   .8698024     0.22   0.828     .2753456    5.013668
  LatinoMale |   3.814571   2.467145     2.07   0.038      1.07378    13.55115
   OtherMale |   1.232389   5147.347     0.00   1.000            0           .
------------------------------------------------------------------------------

 -------------
---------> pyschooltype = B

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -625.06896
Iteration 1:   log likelihood = -587.47541
Iteration 2:   log likelihood = -586.69935
Iteration 3:   log likelihood = -582.07314
Iteration 4:   log likelihood =  -580.8659
Iteration 5:   log likelihood = -580.66019
Iteration 6:   log likelihood = -580.64665
Iteration 7:   log likelihood = -580.64436
Iteration 8:   log likelihood = -580.64383
Iteration 9:   log likelihood = -580.64371
Iteration 10:  log likelihood = -580.64368  (not concave)
Iteration 11:  log likelihood = -580.64368  (not concave)
Iteration 12:  log likelihood = -580.64368  (not concave)
Iteration 13:  log likelihood = -580.64368  (not concave)
Iteration 14:  log likelihood = -580.64368  (not concave)
Iteration 15:  log likelihood = -580.64368  (not concave)
Iteration 16:  log likelihood = -580.64368  (not concave)
```

```
Iteration 17:  log likelihood = -580.64368  (not concave)
Iteration 18:  log likelihood = -580.64368  (not concave)
Iteration 19:  log likelihood = -580.64368  (not concave)
Iteration 20:  log likelihood = -580.64368  (not concave)
convergence not achieved

Multinomial logistic regression                 Number of obs   =        660
                                                LR chi2(31)     =      88.85
                                                Prob > chi2     =     0.0000
Log likelihood = -580.64368                     Pseudo R2       =     0.0711

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.073532   .0217983     3.49   0.000     1.031647    1.117117
       exper |   .9573089   .0245026    -1.70   0.088     .9104693    1.006558
pyperstudlep |    1.01597   .0099807     1.61   0.107     .9965958    1.035722
pyperstude~s |   .9821088   .0073158    -2.42   0.015     .9678742    .9965527
pyperstudw~e |   .9749185   .0320295    -0.77   0.439     .9141204     1.03976
pyperstudb~k |   1.009623   .0345776     0.28   0.780      .944077     1.07972
pyperstudl~o |   .9936591   .0323725    -0.20   0.845     .9321935    1.059177
pyperstudm~e |   .9917114   .0045556    -1.81   0.070     .9828227     1.00068
        male |   1.051356   .3441776     0.15   0.878     .5534727    1.997118
         age |   .9690124   .0196216    -1.55   0.120     .9313078    1.008243
       Asian |  (omitted)
       Black |   2.590095   1.441068     1.71   0.087     .8704162    7.707335
      Latino |   2.245433   1.279149     1.42   0.156     .7351887    6.858062
       Other |   22.07058   29.71405     2.30   0.022     1.576974    308.8893
   AsianMale |  (omitted)
   BlackMale |   .4600037   .3507108    -1.02   0.308     .1032281    2.049863
  LatinoMale |   1.502603   1.086813     0.56   0.573     .3640669    6.201649
   OtherMale |   1.18e-13   7.60e-08    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9793196   .0114865    -1.78   0.075     .9570633    1.002093
       exper |   1.043035   .0162171     2.71   0.007      1.01173    1.075309
pyperstudlep |    .997704   .0083787    -0.27   0.784     .9814165    1.014262
pyperstude~s |    .997913   .0048924    -0.43   0.670       .98837    1.007548
pyperstudw~e |   1.035101   .0326088     1.10   0.273     .9731223    1.101028
pyperstudb~k |   1.042562   .0338743     1.28   0.200     .9782395    1.111114
pyperstudl~o |   1.038388   .0325765     1.20   0.230     .9764631    1.104241
pyperstudm~e |    1.00279   .0031493     0.89   0.375     .9966363    1.008981
        male |   1.206932   .2404592     0.94   0.345      .816764    1.783484
         age |   .9744743   .0141552    -1.78   0.075     .9471219    1.002617
       Asian |  (omitted)
       Black |   .8947351    .459511    -0.22   0.829      .326995    2.448206
      Latino |   .8330744   .4169992    -0.36   0.715     .3123281    2.222064
       Other |   3.88e-10   3.63e-10   -23.21   0.000     6.23e-11    2.42e-09
   AsianMale |  (omitted)
   BlackMale |   1.192559   .7773767     0.27   0.787     .3323682    4.278984
  LatinoMale |    1.54324   .9810836     0.68   0.495     .4439147    5.364974
   OtherMale |   2.83e+09          .        .       .            .           .
------------------------------------------------------------------------------
Warning: convergence not achieved

 -------------
---------->  pyschooltype = E

Iteration 0:   log likelihood = -10150.243
Iteration 1:   log likelihood = -9626.7773
Iteration 2:   log likelihood = -9622.5665
Iteration 3:   log likelihood = -9622.5649
Iteration 4:   log likelihood = -9622.5649
```

```
Multinomial logistic regression                 Number of obs   =       9393
                                                LR chi2(36)     =    1055.36
                                                Prob > chi2     =     0.0000
Log likelihood = -9622.5649                     Pseudo R2       =     0.0520

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.002209   .0042712     0.52   0.605     .9938723    1.010615
       exper |   1.004213   .0056707     0.74   0.457     .9931599    1.015389
pyperstudlep |   1.009775   .0020447     4.80   0.000     1.005775     1.01379
pyperstude~s |   .9835398   .0022904    -7.13   0.000     .9790608    .9880392
pyperstudw~e |   .9951741   .0060237    -0.80   0.424     .9834375    1.007051
pyperstudb~k |   1.002236   .0067253     0.33   0.739     .9891413    1.015505
pyperstudl~o |   1.003593   .0063998     0.56   0.574     .9911274    1.016215
pyperstudm~e |   1.009692   .0038875     2.51   0.012     1.002101     1.01734
        male |   1.686369   .1509983     5.84   0.000     1.414932    2.009878
         age |    .974847   .0045001    -5.52   0.000     .9660668     .983707
       Asian |   .8004687   .4520799    -0.39   0.694     .2646136    2.421456
       Black |   1.348015   .1372185     2.93   0.003     1.104202    1.645664
      Latino |   1.031705    .090288     0.36   0.721     .8690885    1.224749
       Other |   .7804701   .2550359    -0.76   0.448     .4113461     1.48083
   AsianMale |   1.903494   1.648878     0.74   0.457     .3485048    10.39667
   BlackMale |   .8925574   .1833487    -0.55   0.580     .5967367    1.335026
  LatinoMale |    .930239   .1454095    -0.46   0.644     .6847621    1.263716
   OtherMale |   1.526084   1.101017     0.59   0.558     .3710785    6.276114
-------------+----------------------------------------------------------------
3            |
      tenure |   1.017714   .0036124     4.95   0.000     1.010658    1.024819
       exper |   1.059262    .005546    11.00   0.000     1.048448    1.070188
pyperstudlep |   1.000822   .0018929     0.43   0.664     .9971191    1.004539
pyperstude~s |    1.00229   .0020877     1.10   0.272     .9982062     1.00639
pyperstudw~e |   1.012457    .006192     2.02   0.043     1.000393    1.024666
pyperstudb~k |   1.001108    .006746     0.16   0.869     .9879733    1.014418
pyperstudl~o |   1.002782   .0064372     0.43   0.665     .9902445    1.015478
pyperstudm~e |   1.005351   .0036202     1.48   0.138     .9982811    1.012472
        male |   2.650636   .2057387    12.56   0.000      2.27657    3.086165
         age |   .9805016   .0044198    -4.37   0.000     .9718771    .9892026
       Asian |   1.241115   .6672181     0.40   0.688     .4327227    3.559708
       Black |   1.036719    .104744     0.36   0.721     .8504731    1.263751
      Latino |   1.256897   .1025365     2.80   0.005     1.071173    1.474823
       Other |   .4816568   .1729991    -2.03   0.042     .2382359    .9737963
   AsianMale |   .5860212   .5182794    -0.60   0.546     .1035398    3.316799
   BlackMale |   .6910189   .1369373    -1.87   0.062     .4686079    1.018991
  LatinoMale |   .5565519   .0815107    -4.00   0.000      .417678       .7416
   OtherMale |   .8535108   .6466734    -0.21   0.834     .1933238     3.76819
------------------------------------------------------------------------------

 -------------
---------->  pyschooltype = M

Iteration 0:   log likelihood =  -5736.134
Iteration 1:   log likelihood = -5458.5735
Iteration 2:   log likelihood =   -5454.62
Iteration 3:   log likelihood = -5454.6068
Iteration 4:   log likelihood = -5454.6068

Multinomial logistic regression                 Number of obs   =       5445
                                                LR chi2(36)     =     563.05
                                                Prob > chi2     =     0.0000
Log likelihood = -5454.6068                     Pseudo R2       =     0.0491

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
```

```
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.016208   .0050488     3.24   0.001      1.00636    1.026152
       exper |   1.001085   .0062615     0.17   0.862      .988888    1.013433
pyperstudlep |   1.013737   .0040638     3.40   0.001     1.005803    1.021733
pyperstude~s |   .9979192   .0028575    -0.73   0.467     .9923342    1.003536
pyperstudw~e |   .9850772   .0084603    -1.75   0.080     .9686341    1.001799
pyperstudb~k |   .9884053   .0094063    -1.23   0.220     .9701402    1.007014
pyperstudl~o |   .9819135   .0089869    -1.99   0.046     .9644566    .9996863
pyperstudm~e |   1.004227   .0036086     1.17   0.241     .9971787    1.011324
        male |   1.478708    .119436     4.84   0.000     1.262206    1.732345
         age |   .9608695   .0050256    -7.63   0.000     .9510698    .9707702
       Asian |   .5869132   .3595369    -0.87   0.384     .1766593    1.949894
       Black |   1.056619   .1336316     0.44   0.663     .8246434     1.35385
      Latino |   1.751245   .2196636     4.47   0.000     1.369551    2.239317
       Other |   .5251825   .2704428    -1.25   0.211     .1914185    1.440909
   AsianMale |   1.774587    1.59503     0.64   0.523     .3048051    10.33171
   BlackMale |   1.407841   .2667243     1.81   0.071     .9711541    2.040888
  LatinoMale |    1.02593   .1707219     0.15   0.878     .7404095    1.421555
   OtherMale |   1.667481   1.089082     0.78   0.434     .4635705    5.997997
-------------+----------------------------------------------------------------
3            |
      tenure |   1.011998   .0050042     2.41   0.016     1.002238    1.021854
       exper |    1.06328   .0078362     8.33   0.000     1.048032     1.07875
pyperstudlep |   1.006463   .0049967     1.30   0.194     .9967169    1.016304
pyperstude~s |   1.009298   .0032915     2.84   0.005     1.002867     1.01577
pyperstudw~e |    1.02505   .0116968     2.17   0.030     1.002379    1.048234
pyperstudb~k |   1.007975   .0126425     0.63   0.527     .9834977    1.033061
pyperstudl~o |   1.007741    .012161     0.64   0.523     .9841852     1.03186
pyperstudm~e |   1.003426   .0042562     0.81   0.420     .9951182    1.011802
        male |    1.88974   .1669749     7.20   0.000     1.589246    2.247052
         age |   .9607778   .0064356    -5.97   0.000     .9482467    .9734744
       Asian |    .340599   .3632808    -1.01   0.313     .0421073    2.755051
       Black |   .8866603    .146815    -0.73   0.468     .6409345    1.226594
      Latino |   1.499778   .2320526     2.62   0.009     1.107452    2.031088
       Other |   .3570995   .2699108    -1.36   0.173     .0811737    1.570952
   AsianMale |    5.13516   6.411163     1.31   0.190     .4444704    59.32874
   BlackMale |   1.774137   .4009613     2.54   0.011     1.139233    2.762879
  LatinoMale |   .8315456   .1649107    -0.93   0.352      .563738    1.226577
   OtherMale |   2.348717   2.059553     0.97   0.330     .4211389    13.09894
------------------------------------------------------------------------------

 -------------
---------->  pyschooltype = S

Iteration 0:   log likelihood = -6922.5073
Iteration 1:   log likelihood = -6631.1211
Iteration 2:   log likelihood = -6618.7856
Iteration 3:   log likelihood = -6618.6948
Iteration 4:   log likelihood = -6618.6948

Multinomial logistic regression                 Number of obs   =       7092
                                                LR chi2(36)     =     607.62
                                                Prob > chi2     =     0.0000
Log likelihood = -6618.6948                     Pseudo R2       =     0.0439

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.005852   .0038507     1.52   0.127     .9983327    1.013427
       exper |   1.000476   .0051748     0.09   0.927     .9903846     1.01067
pyperstudlep |   1.020022   .0043396     4.66   0.000     1.011552    1.028563
```

```
pyperstude~s |   .9897451    .002228    -4.58   0.000      .985388    .9941215
pyperstudw~e |   .9996238   .0069013    -0.05   0.957     .9861886    1.013242
pyperstudb~k |   1.006404   .0074885     0.86   0.391     .9918331    1.021189
pyperstudl~o |   1.004409   .0072892     0.61   0.544     .9902235    1.018798
pyperstudm~e |   .9985272   .0021643    -0.68   0.496     .9942943    1.002778
        male |   1.140732   .0775389     1.94   0.053     .9984465    1.303293
         age |   .9726016   .0045489    -5.94   0.000     .9637267    .9815584
       Asian |   .4646841   .3008542    -1.18   0.237     .1306344    1.652944
       Black |   1.300309   .1603631     2.13   0.033     1.021105    1.655856
      Latino |   1.511927   .1832601     3.41   0.001     1.192221    1.917364
       Other |   .5830309   .3003124    -1.05   0.295     .2124455    1.600057
   AsianMale |   2.134756   1.940155     0.83   0.404     .3595346    12.67523
   BlackMale |   1.928771   .3255626     3.89   0.000     1.385492    2.685081
  LatinoMale |   1.188739   .1767508     1.16   0.245     .8882254    1.590924
   OtherMale |   2.146265   1.386269     1.18   0.237     .6051926     7.61155
-------------+----------------------------------------------------------------
3            |
      tenure |   .9985751   .0044319    -0.32   0.748     .9899263    1.007299
       exper |   1.044024   .0070179     6.41   0.000     1.030359    1.057869
pyperstudlep |   1.003208   .0061489     0.52   0.601      .991228    1.015332
pyperstude~s |   1.012298    .002713     4.56   0.000     1.006994    1.017629
pyperstudw~e |   1.064779   .0137806     4.85   0.000     1.038109    1.092134
pyperstudb~k |   1.051043   .0142984     3.66   0.000     1.023389    1.079445
pyperstudl~o |    1.04856   .0139506     3.56   0.000     1.021571    1.076263
pyperstudm~e |    1.01575   .0021111     7.52   0.000      1.01162    1.019896
        male |   1.894778    .168579     7.18   0.000     1.591574    2.255745
         age |   .9756543   .0063046    -3.81   0.000     .9633755    .9880897
       Asian |   .8572909   .6652222    -0.20   0.843     .1873403    3.923063
       Black |   .7560049   .1602998    -1.32   0.187     .4989302    1.145538
      Latino |   1.475099   .2541351     2.26   0.024     1.052382    2.067612
       Other |   1.458599   .8305375     0.66   0.507       .47781     4.45263
   AsianMale |   .6733969   .8943927    -0.30   0.766     .0498565    9.095372
   BlackMale |   1.924821   .5056473     2.49   0.013     1.150221    3.221066
  LatinoMale |   .7021067   .1442903    -1.72   0.085     .4693235     1.05035
   OtherMale |   1.198522   .8523291     0.25   0.799     .2973817    4.830344
------------------------------------------------------------------------------
```

2003-04

```
. mlogit admin  tenure exper  acctrating2  pyperstudlep pyperstudecodis pyperstudwhite
pyperstudblack pyperstudlatino pyperstudmobile ma
> le age Asian Black Latino Other AsianMale BlackMale LatinoMale OtherMale if
validcert2004a==1, rrr

Iteration 0:   log likelihood = -24189.362
Iteration 1:   log likelihood = -23045.246
Iteration 2:   log likelihood = -23024.356
Iteration 3:   log likelihood = -23024.322
Iteration 4:   log likelihood = -23024.322

Multinomial logistic regression                 Number of obs   =      22835
                                                LR chi2(38)     =    2330.08
                                                Prob > chi2     =     0.0000
Log likelihood = -23024.322                     Pseudo R2       =     0.0482

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.009167   .0024851     3.71   0.000     1.004308     1.01405
       exper |   1.006603   .0032125     2.06   0.039     1.000327    1.012919
 acctrating2 |   .9579374   .0284362    -1.45   0.148     .9037939    1.015325
pyperstudlep |   1.009129   .0013505     6.79   0.000     1.006485    1.011779
pyperstude~s |   .9891095   .0012683    -8.54   0.000     .9866267    .9915985
pyperstudw~e |   .9893666   .0036456    -2.90   0.004     .9822471    .9965378
```

```
pyperstudb~k |   .9938998   .0040753    -1.49   0.136     .9859443    1.001919
pyperstudl~o |    .994843   .0038843    -1.32   0.185     .9872589    1.002485
pyperstudm~e |   1.008493   .0021656     3.94   0.000     1.004258    1.012747
        male |   1.191842   .0495425     4.22   0.000     1.098591    1.293009
         age |   .9718868   .0026245   -10.56   0.000     .9667564    .9770445
       Asian |   .6461345   .1920707    -1.47   0.142     .3608226     1.15705
       Black |   1.180773   .0763507     2.57   0.010     1.040223    1.340314
      Latino |   1.282652    .075526     4.23   0.000     1.142846     1.43956
       Other |   .7233674   .1604613    -1.46   0.144     .4683179    1.117319
   AsianMale |   1.910634   .8543886     1.45   0.148     .7953188    4.590013
   BlackMale |   1.761808   .1800526     5.54   0.000     1.442009    2.152531
  LatinoMale |   1.270611   .1067103     2.85   0.004     1.077769    1.497957
   OtherMale |   1.914336   .6257183     1.99   0.047     1.008777    3.632798
-------------+----------------------------------------------------------------
3            |
      tenure |    1.01384   .0023467     5.94   0.000     1.009251     1.01845
       exper |   1.057982   .0036443    16.36   0.000     1.050863    1.065148
 acctrating2 |   1.422751   .0417263    12.02   0.000     1.343275    1.506929
pyperstudlep |   1.012204   .0014155     8.67   0.000     1.009434    1.014982
pyperstude~s |   1.019792   .0013619    14.67   0.000     1.017126    1.022465
pyperstudw~e |   1.013272   .0043808     3.05   0.002     1.004722    1.021895
pyperstudb~k |   .9982093   .0047729    -0.37   0.708     .9888984    1.007608
pyperstudl~o |   .9929193   .0045265    -1.56   0.119     .9840871    1.001831
pyperstudm~e |   .9931635   .0025541    -2.67   0.008     .9881702    .9981819
        male |   1.331311   .0561951     6.78   0.000     1.225603    1.446135
         age |   .9757221   .0030093    -7.97   0.000     .9698419    .9816381
       Asian |   .7446488   .2582289    -0.85   0.395     .3773743    1.469369
       Black |   .7894031   .0595793    -3.13   0.002     .6808561    .9152553
      Latino |   1.173781   .0748697     2.51   0.012     1.035841     1.33009
       Other |   .4983354   .1349681    -2.57   0.010     .2930787    .8473431
   AsianMale |   .8019375   .4574871    -0.39   0.699     .2621497    2.453193
   BlackMale |   1.737414   .2054541     4.67   0.000     1.377991    2.190586
  LatinoMale |   1.015916    .094044     0.17   0.865     .8473476    1.218019
   OtherMale |   1.901416   .7624886     1.60   0.109     .8664354    4.172711
------------------------------------------------------------------------------

. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=22835)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     38.156    2    0.000
       exper |    293.827    2    0.000
 acctrating2 |    180.359    2    0.000
pyperstudlep |     89.956    2    0.000
pyperstude~s |    428.309    2    0.000
pyperstudw~e |     27.650    2    0.000
pyperstudb~k |      2.242    2    0.326
pyperstudl~o |      3.128    2    0.209
pyperstudm~e |     33.492    2    0.000
        male |     50.340    2    0.000
         age |    140.908    2    0.000
       Asian |      2.514    2    0.285
       Black |     23.998    2    0.000
      Latino |     19.068    2    0.000
       Other |      8.036    2    0.018
   AsianMale |      2.742    2    0.254
   BlackMale |     38.748    2    0.000
  LatinoMale |      9.153    2    0.010
   OtherMale |      5.171    2    0.075
---------------------------------------

**** Wald tests for independent variables (N=22835)
```

Ho: All coefficients associated with given variable(s) are 0.

	chi2	df	P>chi2
tenure	38.075	2	0.000
exper	276.409	2	0.000
acctrating2	181.619	2	0.000
pyperstudlep	88.733	2	0.000
pyperstude~s	413.691	2	0.000
pyperstudw~e	27.239	2	0.000
pyperstudb~k	2.250	2	0.325
pyperstudl~o	3.126	2	0.210
pyperstudm~e	33.204	2	0.000
male	50.265	2	0.000
age	138.385	2	0.000
Asian	2.437	2	0.296
Black	23.726	2	0.000
Latino	19.075	2	0.000
Other	7.471	2	0.024
AsianMale	2.742	2	0.254
BlackMale	38.026	2	0.000
LatinoMale	9.162	2	0.010
OtherMale	5.112	2	0.078

**** Hausman tests of IIA assumption (N=22835)

Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

Omitted	chi2	df	P>chi2	evidence
2	111.539	19	0.000	against Ho
3	-7.784	19	---	---

Note: If chi2<0, the estimated model does not meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=22835)

Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

Omitted	lnL(full)	lnL(omit)	chi2	df	P>chi2	evidence
2	-4981.981	-4973.719	16.524	20	0.684	for Ho
3	-5451.061	-5444.298	13.526	20	0.854	for Ho

**** Wald tests for combining alternatives (N=22835)

Ho: All coefficients except intercepts associated with a given pair of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested	chi2	df	P>chi2
2-3	1499.117	19	0.000
2-1	533.963	19	0.000
3-1	1287.871	19	0.000

**** LR tests for combining alternatives (N=22835)

Ho: All coefficients except intercepts associated with a given pair of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested	chi2	df	P>chi2
2-3	1681.730	19	0.000

```
       2-       1  |  554.168   19    0.000
       3-       1  | 1423.244   19    0.000
-------------------------------------------
by region:
. bysort region: mlogit admin  tenure exper  acctrating2  pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyp
> erstudmobile male age Asian Black Latino Other AsianMale BlackMale LatinoMale OtherMale
if validcert2004a==1, rrr iter(20)


---------->  region = 1

note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -1725.4395
Iteration 1:   log likelihood = -1635.8432
Iteration 2:   log likelihood = -1632.8416
Iteration 3:   log likelihood = -1632.5298
Iteration 4:   log likelihood = -1632.4886
Iteration 5:   log likelihood = -1632.4796
Iteration 6:   log likelihood = -1632.4774
Iteration 7:   log likelihood =  -1632.477
Iteration 8:   log likelihood = -1632.4769
Iteration 9:   log likelihood = -1632.4769

Multinomial logistic regression                 Number of obs   =       1602
                                                LR chi2(36)     =     185.93
                                                Prob > chi2     =     0.0000
Log likelihood = -1632.4769                     Pseudo R2       =     0.0539

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.022024   .0093906     2.37   0.018     1.003784    1.040596
       exper |   1.001756   .0135897     0.13   0.897     .9754721    1.028749
 acctrating2 |   .8076145   .1028066    -1.68   0.093     .6292874    1.036476
pyperstudlep |   1.007838   .0031451     2.50   0.012     1.001692    1.014021
pyperstude~s |   .9981838   .0062063    -0.29   0.770     .9860935    1.010422
pyperstudw~e |   1.013092   .0839378     0.16   0.875     .8612398    1.191718
pyperstudb~k |   .9371971   .1215723    -0.50   0.617     .7267982    1.208504
pyperstudl~o |   1.000802   .0756964     0.01   0.992     .8629123    1.160725
pyperstudm~e |   .9897164    .008229    -1.24   0.214     .9737186    1.005977
        male |   1.334747   .3766863     1.02   0.306     .7676741    2.320712
         age |   .9677146   .0109022    -2.91   0.004     .9465809    .9893201
       Asian |   2.37e-07    .000446    -0.01   0.994            0           .
       Black |   4.32e-07   .0008135    -0.01   0.994            0           .
      Latino |   1.037658   .2130858     0.18   0.857      .693837    1.551853
       Other |   1.603213   1.636914     0.46   0.644     .2167187    11.86003
   AsianMale |    2694189   5.07e+09     0.01   0.994            0           .
   BlackMale |    1387097   2.61e+09     0.01   0.994            0           .
  LatinoMale |   1.052426   .3290731     0.16   0.870     .5702135    1.942432
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.024357   .0095529     2.58   0.010     1.005803    1.043252
       exper |   1.093309   .0187437     5.20   0.000     1.057183     1.13067
 acctrating2 |   1.231893     .16854     1.52   0.127      .942143    1.610754
pyperstudlep |   1.019558   .0035219     5.61   0.000     1.012679    1.026484
pyperstude~s |   .9982127   .0072957    -0.24   0.807     .9840153    1.012615
pyperstudw~e |   1.140483   .1148479     1.31   0.192     .9362066    1.389331
pyperstudb~k |   .9946812   .2693205    -0.02   0.984     .5850757    1.691047
pyperstudl~o |   1.115597    .102438     1.19   0.234     .9318525    1.335573
pyperstudm~e |   .9802481     .01043    -1.87   0.061     .9600174    1.000905
        male |    .832507   .2815742    -0.54   0.588     .4290331    1.615418
         age |   .9452741   .0144268    -3.69   0.000     .9174168    .9739773
```

```
       Asian |   3.83e-07   .0008515    -0.01   0.995           0           .
       Black |   9.19e-07   .0020438    -0.01   0.995           0           .
      Latino |   .8947332   .2000225    -0.50   0.619     .5773017    1.386706
       Other |   1.899635   1.992165     0.61   0.541     .2432244    14.83656
   AsianMale |   8.472975   20514.29     0.00   0.999           0           .
   BlackMale |   2.001829   4697.436     0.00   1.000           0           .
  LatinoMale |   1.589191    .592339     1.24   0.214     .7654345    3.299471
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 2

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -762.95746
Iteration 1:   log likelihood = -712.17598
Iteration 2:   log likelihood = -709.95058
Iteration 3:   log likelihood = -709.64909
Iteration 4:   log likelihood = -709.59948
Iteration 5:   log likelihood =  -709.5883
Iteration 6:   log likelihood = -709.58549
Iteration 7:   log likelihood = -709.58496
Iteration 8:   log likelihood = -709.58487
Iteration 9:   log likelihood = -709.58485

Multinomial logistic regression                 Number of obs   =        767
                                                LR chi2(36)     =     106.75
                                                Prob > chi2     =     0.0000
Log likelihood = -709.58485                     Pseudo R2       =     0.0700

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.00554   .0154488     0.36   0.719     .9757121     1.03628
       exper |   .9953279   .0197085    -0.24   0.813       .95744    1.034715
 acctrating2 |   .9532188   .1942502    -0.24   0.814       .63934    1.421194
pyperstudlep |    .985889   .0133334    -1.05   0.293     .9600993    1.012372
pyperstude~s |   1.005922   .0077216     0.77   0.442     .9909014    1.021171
pyperstudw~e |   .9252384   .0806307    -0.89   0.373     .7799648     1.09757
pyperstudb~k |   .9561243   .0881854    -0.49   0.627      .798006    1.145572
pyperstudl~o |   .9236675   .0773006    -0.95   0.343     .7839343    1.088308
pyperstudm~e |   1.011778   .0096654     1.23   0.220       .99301      1.0309
        male |   1.198747   .3470808     0.63   0.531     .6796319    2.114371
         age |   .9660118   .0154347    -2.16   0.030     .9362292    .9967419
       Asian |   4.30e-07   .0006909    -0.01   0.993           0           .
       Black |   1.296211   1.266242     0.27   0.791     .1910532     8.79422
      Latino |   1.043621   .2798736     0.16   0.874     .6169801    1.765282
       Other |   4.51e-07   .0004595    -0.01   0.989           0           .
   AsianMale |  (omitted)
   BlackMale |   2.825339   3.806172     0.77   0.441     .2015439    39.60697
  LatinoMale |   1.629591   .6429406     1.24   0.216     .7520467    3.531121
   OtherMale |    6004582   6.12e+09     0.02   0.988           0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.002332   .0129282     0.18   0.857     .9773105    1.027994
       exper |   1.056745   .0204387     2.85   0.004     1.017436    1.097573
 acctrating2 |   1.833249   .3335555     3.33   0.001     1.283357     2.61876
pyperstudlep |   .9802964   .0150344    -1.30   0.194      .951268    1.010211
pyperstude~s |   1.029137   .0084447     3.50   0.000     1.012718    1.045822
pyperstudw~e |   1.088339    .098571     0.93   0.350     .9113202    1.299744
pyperstudb~k |    1.06609   .1048495     0.65   0.515     .8791813    1.292734
pyperstudl~o |   1.067589   .0933283     0.75   0.454     .8994812    1.267114
pyperstudm~e |   .9844568   .0133323    -1.16   0.247     .9586697    1.010938
        male |   1.302763    .374704     0.92   0.358     .7413798    2.289234
```

```
         age |   .9724384   .0169243    -1.61   0.108     .9398268    1.006182
       Asian |   1.13e-06    .001771    -0.01   0.993            0           .
       Black |   3.981576   3.386972     1.62   0.104     .7515728    21.09303
      Latino |   1.046709   .2700787     0.18   0.860     .6312381    1.735635
       Other |   8.48e-07   .0007982    -0.01   0.988            0           .
   AsianMale |  (omitted)
   BlackMale |   .6650212   .8863528    -0.31   0.760     .0487908    9.064272
  LatinoMale |   1.291721   .5058078     0.65   0.513     .5995955    2.782783
   OtherMale |   2.357502   3389.038     0.00   1.000            0           .
-------------------------------------------------------------------------------


---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -296.76628
Iteration 1:   log likelihood = -270.15374
Iteration 2:   log likelihood = -269.16576
Iteration 3:   log likelihood = -269.14892
Iteration 4:   log likelihood = -269.14562
Iteration 5:   log likelihood = -269.14491
Iteration 6:   log likelihood = -269.14475
Iteration 7:   log likelihood = -269.14471
Iteration 8:   log likelihood =  -269.1447

Multinomial logistic regression                 Number of obs   =        281
                                                LR chi2(32)     =      55.24
                                                Prob > chi2     =     0.0065
Log likelihood =  -269.1447                     Pseudo R2       =     0.0931

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.024976   .0258706     0.98   0.328     .9755043    1.076957
       exper |   .9424401   .0306314    -1.82   0.068      .884276     1.00443
 acctrating2 |    1.26437   .3656151     0.81   0.417     .7173548    2.228508
pyperstudlep |   .9627728   .0374399    -0.98   0.329     .8921187    1.039023
pyperstude~s |   .9720102   .0184369    -1.50   0.134     .9365379    1.008826
pyperstudw~e |   .9941396   .0554558    -0.11   0.916     .8911792    1.108995
pyperstudb~k |   1.043648    .060215     0.74   0.459     .9320569    1.168599
pyperstudl~o |   1.035044   .0623588     0.57   0.568     .9197631    1.164773
pyperstudm~e |   .9706143    .028007    -1.03   0.301      .917245    1.027089
        male |    1.33242    .510623     0.75   0.454     .6286884    2.823884
         age |   1.001849   .0300698     0.06   0.951     .9446133    1.062553
       Asian |  (omitted)
       Black |   4.633005   3.736127     1.90   0.057      .953763    22.50531
      Latino |   1.967326   1.274886     1.04   0.296      .552424    7.006162
       Other |   .6078162   1092.413    -0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   .5480934    .913931    -0.36   0.718     .0208689    14.39495
  LatinoMale |    .667084   .6471116    -0.42   0.676     .0996469    4.465779
   OtherMale |  (omitted)
-------------+-----------------------------------------------------------------
3            |
      tenure |   1.016494   .0206771     0.80   0.421     .9767653    1.057839
       exper |   1.035055   .0331531     1.08   0.282     .9720732    1.102116
 acctrating2 |   1.075667   .2686404     0.29   0.770     .6593202    1.754929
pyperstudlep |   .9579126   .0281689    -1.46   0.144     .9042635    1.014745
pyperstude~s |   1.054194   .0185838     2.99   0.003     1.018393    1.091254
pyperstudw~e |   1.118698    .065671     1.91   0.056     .9971134    1.255107
pyperstudb~k |   1.079238   .0653155     1.26   0.208     .9585231    1.215156
pyperstudl~o |   1.089205   .0685781     1.36   0.175     .9627566    1.232261
```

```
pyperstudm~e |   .9660608   .0289836    -1.15   0.250     .9108919    1.024571
        male |   1.161141   .4006676     0.43   0.665     .5904269    2.283514
         age |   .9895607   .0306138    -0.34   0.734     .9313417    1.051419
       Asian |  (omitted)
       Black |   2.697177   2.264178     1.18   0.237     .5204246    13.97851
      Latino |   1.613211   1.067792     0.72   0.470     .4408357    5.903443
       Other |    5151174   5.33e+09     0.01   0.988            0           .
   AsianMale |  (omitted)
   BlackMale |    .553415   .9240394    -0.35   0.723     .0209796    14.59841
  LatinoMale |   .7742087   .7601961    -0.26   0.794     .1129959    5.304611
   OtherMale |  (omitted)
-------------------------------------------------------------------------------


---------->  region = 4

Iteration 0:   log likelihood = -4993.8732
Iteration 1:   log likelihood = -4720.3197
Iteration 2:   log likelihood =  -4710.564
Iteration 3:   log likelihood =  -4710.364
Iteration 4:   log likelihood = -4710.3184
Iteration 5:   log likelihood =  -4710.309
Iteration 6:   log likelihood =  -4710.307
Iteration 7:   log likelihood = -4710.3065
Iteration 8:   log likelihood = -4710.3064
Iteration 9:   log likelihood = -4710.3064

Multinomial logistic regression                 Number of obs   =       4855
                                                LR chi2(38)     =     567.13
                                                Prob > chi2     =     0.0000
Log likelihood = -4710.3064                     Pseudo R2       =     0.0568

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.013706   .0052953     2.61   0.009     1.003381    1.024138
       exper |   1.037964   .0072828     5.31   0.000     1.023787    1.052336
 acctrating2 |   1.019932   .0618231     0.33   0.745     .9056817    1.148594
pyperstudlep |   1.001307     .00321     0.41   0.684     .9950347    1.007618
pyperstude~s |   .9913793    .003409    -2.52   0.012     .9847204    .9980833
pyperstudw~e |   1.000556   .0057436     0.10   0.923     .9893614    1.011876
pyperstudb~k |   1.004463   .0070982     0.63   0.529     .9906465    1.018472
pyperstudl~o |   1.005793   .0068788     0.84   0.398     .9924007    1.019366
pyperstudm~e |   1.011435   .0055852     2.06   0.039     1.000547    1.022441
        male |    1.01847   .0919381     0.20   0.839     .8533158     1.21559
         age |   .9483976   .0057326    -8.77   0.000     .9372281    .9597001
       Asian |   .8170373   .3618157    -0.46   0.648     .3430022    1.946197
       Black |   .8107575   .0882015    -1.93   0.054     .6550728    1.003442
      Latino |   1.226374   .1696152     1.48   0.140     .9351821    1.608234
       Other |   .4304691   .2021384    -1.79   0.073     .1714894    1.080554
   AsianMale |   1.442864   1.260663     0.42   0.675     .2603222     7.99723
   BlackMale |   2.250562   .3844411     4.75   0.000     1.610233    3.145526
  LatinoMale |   1.573798    .358769     1.99   0.047     1.006713    2.460323
   OtherMale |   1.097046   1.020307     0.10   0.921     .1772416    6.790223
-------------+----------------------------------------------------------------
3            |
      tenure |   1.038917   .0060838     6.52   0.000     1.027061     1.05091
       exper |   1.064393   .0092015     7.22   0.000      1.04651    1.082581
 acctrating2 |    1.39527   .0974066     4.77   0.000     1.216842    1.599861
pyperstudlep |   1.014542   .0038217     3.83   0.000     1.007079     1.02206
pyperstude~s |   1.020217   .0044009     4.64   0.000     1.011628    1.028879
pyperstudw~e |   1.013559   .0072593     1.88   0.060       .99943    1.027887
pyperstudb~k |   1.001593   .0089551     0.18   0.859     .9841943      1.0193
pyperstudl~o |   .9880218   .0084235    -1.41   0.158     .9716493     1.00467
```

```
pyperstudm~e |   .9984927   .0072485    -0.21   0.835     .9843865    1.012801
        male |   .9007387   .0991732    -0.95   0.342     .7259049    1.117681
         age |   .9667269   .0073911    -4.43   0.000     .9523486    .9813222
       Asian |   .5692699   .3695511    -0.87   0.385     .1594948    2.031842
       Black |   .4569816   .0643924    -5.56   0.000     .3467029    .6023376
      Latino |   1.171122   .1894021     0.98   0.329     .8529817     1.60792
       Other |   .4575322   .2577015    -1.39   0.165     .1517012    1.379922
   AsianMale |   4.76e-06   .0021539    -0.03   0.978            0           .
   BlackMale |   2.551046   .5646738     4.23   0.000     1.653122    3.936694
  LatinoMale |   1.496652   .4298597     1.40   0.160     .8524004    2.627834
   OtherMale |   3.056831   3.025857     1.13   0.259      .439233    21.27394
------------------------------------------------------------------------------


---------->  region = 5

Iteration 0:   log likelihood = -502.42187
Iteration 1:   log likelihood = -456.18518
Iteration 2:   log likelihood =  -454.7094
Iteration 3:   log likelihood = -454.53919
Iteration 4:   log likelihood =  -454.5086
Iteration 5:   log likelihood = -454.50191
Iteration 6:   log likelihood = -454.50033
Iteration 7:   log likelihood = -454.49998
Iteration 8:   log likelihood =  -454.4999
Iteration 9:   log likelihood = -454.49989

Multinomial logistic regression                 Number of obs   =        497
                                                LR chi2(38)     =      95.84
                                                Prob > chi2     =     0.0000
Log likelihood = -454.49989                     Pseudo R2       =     0.0954

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9829596   .0162973    -1.04   0.300     .9515308    1.015426
       exper |   1.051843   .0280991     1.89   0.058     .9981869    1.108384
 acctrating2 |   1.154888   .2501015     0.66   0.506     .7554474     1.76553
pyperstudlep |   1.052838   .0558091     0.97   0.331     .9489445    1.168106
pyperstude~s |   1.011614    .010608     1.10   0.271     .9910347     1.03262
pyperstudw~e |   1.006776   .0502534     0.14   0.892     .9129456     1.11025
pyperstudb~k |   .9911205   .0507165    -0.17   0.862     .8965401    1.095679
pyperstudl~o |   .9646466   .0679587    -0.51   0.609     .8402368    1.107477
pyperstudm~e |   1.013482   .0242777     0.56   0.576     .9669983      1.0622
        male |   2.328963   .6899251     2.85   0.004     1.303183    4.162172
         age |   .9612405   .0226793    -1.68   0.094     .9178021    1.006735
       Asian |   2.27e-07   .0006647    -0.01   0.996            0           .
       Black |   2.074952    .912539     1.66   0.097     .8763143    4.913108
      Latino |   1.06e-06   .0014855    -0.01   0.992            0           .
       Other |   4.00e-07   .0011722    -0.01   0.996            0           .
   AsianMale |   1.044985   3686.851     0.00   1.000            0           .
   BlackMale |   1.074077   .6072729     0.13   0.899     .3546292    3.253094
  LatinoMale |    1096210   1.53e+09     0.01   0.992            0           .
   OtherMale |   1.28e+14   7.83e+17     0.01   0.996            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.003237   .0156522     0.21   0.836     .9730235    1.034389
       exper |   1.064556   .0277805     2.40   0.017     1.011476    1.120421
 acctrating2 |   1.422993   .2939276     1.71   0.088     .9492531     2.13316
pyperstudlep |   .9960486   .0504191    -0.08   0.938     .9019728    1.099937
pyperstude~s |   1.045519   .0107038     4.35   0.000     1.024749     1.06671
pyperstudw~e |   .9842693   .0461906    -0.34   0.735     .8977761    1.079095
pyperstudb~k |    .946065   .0454073    -1.16   0.248     .8611262    1.039382
pyperstudl~o |   .9484198   .0621096    -0.81   0.419     .8341758     1.07831
```

```
pyperstudm~e |   .9939803   .0244333    -0.25   0.806     .9472273    1.043041
        male |   3.523865   1.027022     4.32   0.000     1.990392    6.238784
         age |   .9910926   .0226283    -0.39   0.695     .9477197    1.036451
       Asian |   4.43e-07   .0011862    -0.01   0.996            0           .
       Black |   2.863888   1.300564     2.32   0.021     1.175991     6.97442
      Latino |   5.990623   9.802138     1.09   0.274     .2424912    147.9953
       Other |   2.60e-06   .0069678    -0.00   0.996            0           .
   AsianMale |   .5844342   1878.854    -0.00   1.000            0           .
   BlackMale |   .9134433   .5302438    -0.16   0.876     .2927982    2.849671
  LatinoMale |   .1835317   .3740577    -0.83   0.406     .0033796    9.966745
   OtherMale |   252103.3   2.48e+09     0.00   0.999            0           .
-------------------------------------------------------------------------------


---------->  region = 6

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -825.59825
Iteration 1:   log likelihood = -765.75007
Iteration 2:   log likelihood = -763.99878
Iteration 3:   log likelihood = -763.89609
Iteration 4:   log likelihood = -763.88501
Iteration 5:   log likelihood = -763.88336
Iteration 6:   log likelihood = -763.88306
Iteration 7:   log likelihood = -763.88299
Iteration 8:   log likelihood = -763.88297

Multinomial logistic regression                 Number of obs   =        771
                                                LR chi2(36)     =     123.43
                                                Prob > chi2     =     0.0000
Log likelihood = -763.88297                     Pseudo R2       =     0.0748

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9906741   .0135235    -0.69   0.492     .9645199    1.017537
       exper |   1.010842   .0183449     0.59   0.552     .9755189    1.047445
 acctrating2 |   1.204538    .180249     1.24   0.214     .8983495    1.615086
pyperstudlep |   1.018299   .0191052     0.97   0.334     .9815336    1.056441
pyperstude~s |   .9804001   .0076399    -2.54   0.011     .9655399     .995489
pyperstudw~e |   1.018455   .0426308     0.44   0.662     .9382357    1.105533
pyperstudb~k |   1.028933    .045325     0.65   0.517     .9438244    1.121716
pyperstudl~o |   1.027963   .0434523     0.65   0.514     .9462304    1.116755
pyperstudm~e |   1.012571   .0154535     0.82   0.413     .9827308    1.043316
        male |   1.244642   .2435655     1.12   0.263     .8481487     1.82649
         age |   .9708539   .0147254    -1.95   0.051     .9424174    1.000148
       Asian |   8.79e-07   .0013273    -0.01   0.993            0           .
       Black |   .4500482   .3043116    -1.18   0.238     .1195907    1.693638
      Latino |   2.488286   1.515392     1.50   0.134     .7542404    8.209014
       Other |   1.482198   5080.739     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   8.399356   8.130901     2.20   0.028     1.259651    56.00695
  LatinoMale |   .2763495   .2435254    -1.46   0.144     .0491316    1.554378
   OtherMale |   542947.8   1.91e+09     0.00   0.997            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9632581   .0128991    -2.80   0.005     .9383052    .9888746
       exper |   1.112616   .0233783     5.08   0.000     1.067726    1.159393
 acctrating2 |   1.538751   .2486586     2.67   0.008     1.121027     2.11213
pyperstudlep |   1.023371   .0196926     1.20   0.230     .9854931    1.062705
pyperstude~s |    1.02846    .008146     3.54   0.000     1.012618    1.044551
pyperstudw~e |   1.031835   .0400084     0.81   0.419     .9563253    1.113306
pyperstudb~k |    1.03152   .0412753     0.78   0.438     .9537129    1.115675
pyperstudl~o |   1.008468   .0394764     0.22   0.829     .9339895    1.088886
```

```
pyperstudm~e |   .9970681   .0153284    -0.19   0.849     .9674731    1.027568
        male |   2.045515   .4248462     3.45   0.001      1.36148    3.073224
         age |   .9420292   .0174876    -3.22   0.001     .9083701    .9769355
       Asian |   1.24e-06   .0019871    -0.01   0.993            0           .
       Black |   1.180045   .6218005     0.31   0.753     .4201221    3.314528
      Latino |   .8788487   .7911956    -0.14   0.886     .1505248    5.131213
       Other |   1.72e+07   3.71e+10     0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   1.028628   .9829035     0.03   0.976     .1580865    6.693021
  LatinoMale |    .539324   .6582616    -0.51   0.613     .0493096    5.898854
   OtherMale |   .0297904   68.35292    -0.00   0.999            0           .
------------------------------------------------------------------------------


--------->  region = 7

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1022.8508
Iteration 1:   log likelihood = -946.94145
Iteration 2:   log likelihood = -943.70513
Iteration 3:   log likelihood = -943.53041
Iteration 4:   log likelihood = -943.50046
Iteration 5:   log likelihood = -943.49379
Iteration 6:   log likelihood = -943.49219
Iteration 7:   log likelihood = -943.49185
Iteration 8:   log likelihood = -943.49178
Iteration 9:   log likelihood = -943.49176

Multinomial logistic regression                 Number of obs   =       1005
                                                LR chi2(36)     =     158.72
                                                Prob > chi2     =     0.0000
Log likelihood = -943.49176                     Pseudo R2       =     0.0776

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9874591   .0134739    -0.92   0.355     .9614007    1.014224
       exper |   .9924252   .0160773    -0.47   0.639     .9614093    1.024442
 acctrating2 |   .7662055   .1406097    -1.45   0.147     .5347337    1.097875
pyperstudlep |   .9944059   .0212311    -0.26   0.793     .9536524    1.036901
pyperstude~s |   .9811933   .0085648    -2.18   0.030     .9645495    .9981244
pyperstudw~e |   .9054171    .108357    -0.83   0.406     .7161104    1.144768
pyperstudb~k |   .9091589   .1098397    -0.79   0.431     .7174675    1.152066
pyperstudl~o |   .9361107   .1150827    -0.54   0.591       .73567    1.191164
pyperstudm~e |   1.000057   .0155051     0.00   0.997     .9701244    1.030912
        male |   1.157298   .2358475     0.72   0.473      .776207    1.725491
         age |   .9774039   .0138141    -1.62   0.106     .9507004    1.004858
       Asian |   6.41e-07   .0010875    -0.01   0.993            0           .
       Black |   1.265951   .4699048     0.64   0.525     .6115918    2.620426
      Latino |   .6670826   .5983262    -0.45   0.652     .1150037    3.869435
       Other |   2.25e-06    .001756    -0.02   0.987            0           .
   AsianMale |  (omitted)
   BlackMale |   5.412121   3.085683     2.96   0.003     1.770357    16.54528
  LatinoMale |   7.561069   11.26159     1.36   0.174     .4081203    140.0807
   OtherMale |   .6713476   957.3747    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9970961   .0101939    -0.28   0.776     .9773153    1.017277
       exper |   1.018742   .0133388     1.42   0.156     .9929309    1.045224
 acctrating2 |   1.430034    .188875     2.71   0.007      1.10388    1.852553
pyperstudlep |   1.037683   .0188527     2.04   0.042     1.001382    1.075299
pyperstude~s |   1.030744   .0068673     4.55   0.000     1.017372    1.044292
pyperstudw~e |   .9591765    .095484    -0.42   0.675     .7891566    1.165826
pyperstudb~k |   .9417455   .0942275    -0.60   0.549     .7740439    1.145781
```

```
pyperstudl~o |   .9259001   .0943388    -0.76   0.450     .7582917    1.130556
pyperstudm~e |    .995802   .0139683    -0.30   0.764     .9687976    1.023559
        male |   1.730209   .2902091     3.27   0.001     1.245449    2.403649
         age |   .9948995   .0117277    -0.43   0.664     .9721772    1.018153
       Asian |   2.45e-06   .0031186    -0.01   0.992            0           .
       Black |   1.203092   .3956192     0.56   0.574     .6315297    2.291944
      Latino |   .2553772   .2881829    -1.21   0.226     .0279663    2.332001
       Other |   1.453423    1.84849     0.29   0.769     .1201762    17.57785
   AsianMale |  (omitted)
   BlackMale |   2.826676   1.552481     1.89   0.058     .9633294    8.294251
  LatinoMale |   28.32878   45.64105     2.08   0.038     1.204593    666.2165
   OtherMale |   7.15e-07   .0006383    -0.02   0.987            0           .
------------------------------------------------------------------------------


---------->  region = 8

note: AsianMale omitted because of collinearity
note: LatinoMale omitted because of collinearity
Iteration 0:   log likelihood = -370.60356
Iteration 1:   log likelihood = -321.72819
Iteration 2:   log likelihood = -319.43205
Iteration 3:   log likelihood = -318.22717
Iteration 4:   log likelihood =  -318.1472
Iteration 5:   log likelihood = -318.13582
Iteration 6:   log likelihood = -318.13443
Iteration 7:   log likelihood = -318.13416
Iteration 8:   log likelihood =  -318.1341
Iteration 9:   log likelihood = -318.13409

Multinomial logistic regression                 Number of obs   =        380
                                                LR chi2(34)     =     104.94
                                                Prob > chi2     =     0.0000
Log likelihood = -318.13409                     Pseudo R2       =     0.1416

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.052844   .0278097     1.95   0.051     .9997246    1.108785
       exper |   .9588306     .03187    -1.26   0.206     .8983578    1.023374
 acctrating2 |   1.398195   .4527734     1.04   0.301      .741183    2.637606
pyperstudlep |   .9632654   .0447316    -0.81   0.420     .8794644    1.055051
pyperstude~s |   .9790538   .0164629    -1.26   0.208      .947313    1.011858
pyperstudw~e |   .7989927   .1190705    -1.51   0.132     .5966118    1.070025
pyperstudb~k |   .8413415   .1267231    -1.15   0.251     .6262737    1.130266
pyperstudl~o |   .8282418   .1252835    -1.25   0.213     .6157447    1.114073
pyperstudm~e |   .9615615   .0278154    -1.36   0.175     .9085609    1.017654
        male |   3.154156   1.215668     2.98   0.003     1.481886    6.713537
         age |   .9924408   .0293148    -0.26   0.797     .9366164    1.051592
       Asian |   5.03e+08   5.12e+12     0.00   0.998            0           .
       Black |   2.207403   1.473719     1.19   0.236     .5964825    8.168941
      Latino |   3.566812   8175.589     0.00   1.000            0           .
       Other |   2.969756   4.063004     0.80   0.426     .2033148    43.37831
   AsianMale |  (omitted)
   BlackMale |   .9582326   1.175867    -0.03   0.972     .0864857     10.6169
  LatinoMale |  (omitted)
   OtherMale |    7618394   1.96e+10     0.01   0.995            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.022572   .0183479     1.24   0.213     .9872363    1.059174
       exper |   1.014227   .0247381     0.58   0.562     .9668817     1.06389
 acctrating2 |   1.775332   .3998053     2.55   0.011     1.141796     2.76039
pyperstudlep |   .9895786   .0313168    -0.33   0.741     .9300636    1.052902
pyperstude~s |   1.040194   .0120226     3.41   0.001     1.016895    1.064027
```

```
pyperstudw~e |    .782208   .1093795    -1.76   0.079     .5946962    1.028844
pyperstudb~k |    .768547   .1071022    -1.89   0.059     .5848571     1.00993
pyperstudl~o |   .7665165   .1069999    -1.90   0.057     .5830426    1.007727
pyperstudm~e |    .976642   .0220637    -1.05   0.295     .9343413    1.020858
        male |   3.078193   .8898904     3.89   0.000     1.746697    5.424679
         age |   1.023206   .0243281     0.96   0.335     .9766173    1.072016
       Asian |   .2731356   4595.606    -0.00   1.000            0           .
       Black |   2.392259   1.366067     1.53   0.127     .7811618    7.326142
      Latino |    7584105   8.52e+09     0.01   0.989            0           .
       Other |   2.42e-06   .0022099    -0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |   1.499473   1.593593     0.38   0.703     .1867704    12.03841
  LatinoMale |  (omitted)
   OtherMale |   3.74e+12   1.02e+16     0.01   0.992            0           .
------------------------------------------------------------------------------


---------->  region = 9

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -231.55137
Iteration 1:   log likelihood = -201.18969
Iteration 2:   log likelihood = -198.72207
Iteration 3:   log likelihood = -198.43924
Iteration 4:   log likelihood = -198.38158
Iteration 5:   log likelihood = -198.36884
Iteration 6:   log likelihood = -198.36674
Iteration 7:   log likelihood = -198.36624
Iteration 8:   log likelihood = -198.36613
Iteration 9:   log likelihood =  -198.3661
Iteration 10:  log likelihood =  -198.3661

Multinomial logistic regression                 Number of obs   =        219
                                                LR chi2(34)     =      66.37
                                                Prob > chi2     =     0.0007
Log likelihood =  -198.3661                     Pseudo R2       =     0.1433

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |   .9993768   .0236739    -0.03   0.979     .9540376    1.046871
       exper |   .9455545   .0330463    -1.60   0.109     .8829535    1.012594
 acctrating2 |   .6712689   .1994841    -1.34   0.180      .374922    1.201855
pyperstudlep |   1.015618   .0632742     0.25   0.804     .8988751    1.147522
pyperstude~s |   .9864022   .0133519    -1.01   0.312      .960577    1.012922
pyperstudw~e |   1.044166   .1205264     0.37   0.708     .8327543     1.30925
pyperstudb~k |   1.032521   .1332329     0.25   0.804     .8017941    1.329643
pyperstudl~o |   1.033229   .1207215     0.28   0.780     .8217563    1.299123
pyperstudm~e |   1.017138   .0256022     0.68   0.500     .9681765    1.068576
        male |   1.040191   .3695033     0.11   0.912     .5184938    2.086807
         age |   1.062784   .0306133     2.11   0.035     1.004445    1.124511
       Asian |   1.289929   27251.54     0.00   1.000            0           .
       Black |    .390262   .5268986    -0.70   0.486     .0276781    5.502705
      Latino |   6.16e+07   3.72e+11     0.00   0.998            0           .
       Other |   4.51e-08   .0001162    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   4.06e+07   8.49e+10     0.01   0.993            0           .
  LatinoMale |   5.75e-16   4.18e-12    -0.00   0.996            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9741643   .0353907    -0.72   0.471     .9072118    1.046058
       exper |   .9192515   .0406827    -1.90   0.057     .8428753    1.002548
 acctrating2 |   .5561602   .2101927    -1.55   0.121     .2651554    1.166539
pyperstudlep |   .9936211    .073606    -0.09   0.931       .85934    1.148885
```

```
pyperstude~s |   1.007875   .0189219     0.42   0.676     .9714627    1.045652
pyperstudw~e |   .7550035    .106846    -1.99   0.047     .5721229    .9963425
pyperstudb~k |   .7947205   .1215774    -1.50   0.133     .5888389    1.072586
pyperstudl~o |   .7468807   .1083071    -2.01   0.044     .5621035    .9923987
pyperstudm~e |   1.020596   .0264655     0.79   0.432     .9700206    1.073808
        male |    1.16267   .5551548     0.32   0.752     .4560604    2.964084
         age |   1.024406   .0339464     0.73   0.467     .9599864    1.093147
       Asian |   3.76e+08   5.45e+12     0.00   0.999            0           .
       Black |   .4109403   .4580118    -0.80   0.425     .0462462    3.651589
      Latino |   .4312429   4539.806    -0.00   1.000            0           .
       Other |   .2927352    .394661    -0.91   0.362       .02084    4.111983
   AsianMale |  (omitted)
   BlackMale |   1.35e+07   2.82e+10     0.01   0.994            0           .
  LatinoMale |   1.29e-07   .0015216    -0.00   0.999            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |  (base outcome)
-------------------------------------------------------------------------------


---------->  region = 10

Iteration 0:   log likelihood = -3561.5192
Iteration 1:   log likelihood = -3356.5853
Iteration 2:   log likelihood =   -3352.52
Iteration 3:   log likelihood = -3352.5089
Iteration 4:   log likelihood = -3352.5089

Multinomial logistic regression                 Number of obs   =       3331
                                                LR chi2(38)     =     418.02
                                                Prob > chi2     =     0.0000
Log likelihood = -3352.5089                     Pseudo R2       =     0.0587

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.015793   .0065062     2.45   0.014      1.00312    1.028625
       exper |    1.01288   .0085229     1.52   0.128     .9963121    1.029723
 acctrating2 |   .8587046   .0647138    -2.02   0.043     .7407906    .9953874
pyperstudlep |   .9999111   .0050244    -0.02   0.986     .9901119    1.009807
pyperstude~s |   .9918399   .0036558    -2.22   0.026     .9847006     .999031
pyperstudw~e |   .9908861   .0081049    -1.12   0.263     .9751275    1.006899
pyperstudb~k |   .9870218   .0086282    -1.49   0.135     .9702549    1.004078
pyperstudl~o |    .994514   .0085126    -0.64   0.520     .9779687    1.011339
pyperstudm~e |   1.007549   .0061373     1.23   0.217     .9955922     1.01965
        male |   1.278901   .1357795     2.32   0.020     1.038642    1.574737
         age |    .968632   .0068146    -4.53   0.000     .9553673    .9820809
       Asian |   .4069682   .3217489    -1.14   0.255     .0864173     1.91655
       Black |   1.636729    .233047     3.46   0.001     1.238163    2.163594
      Latino |   1.737391   .3394428     2.83   0.005     1.184661     2.54801
       Other |   .4726369   .2666801    -1.33   0.184     .1564036    1.428264
   AsianMale |    2.99717   3.089664     1.06   0.287     .3974124     22.6038
   BlackMale |    1.57003   .3461424     2.05   0.041     1.019166     2.41864
  LatinoMale |   1.376153   .4240497     1.04   0.300     .7522743    2.517429
   OtherMale |   4.918548   3.632317     2.16   0.031     1.156724    20.91433
-------------+----------------------------------------------------------------
3            |
      tenure |   1.023521   .0064198     3.71   0.000     1.011015    1.036181
       exper |   1.070628   .0103837     7.04   0.000     1.050469    1.091174
 acctrating2 |   1.354797   .1032306     3.99   0.000     1.166853    1.573015
pyperstudlep |   1.017275   .0058433     2.98   0.003     1.005887    1.028792
pyperstude~s |   1.017387    .003984     4.40   0.000     1.009608    1.025225
pyperstudw~e |   1.015776   .0091758     1.73   0.083     .9979501    1.033921
pyperstudb~k |    .999688    .009813    -0.03   0.975     .9806388    1.019107
```

```
pyperstudl~o |   .9858492   .0093493    -1.50   0.133     .9676943    1.004345
pyperstudm~e |   .9922866   .0075035    -1.02   0.306     .9776884    1.007103
        male |   1.065603     .12289     0.55   0.582     .8500242    1.335856
         age |   .9654047   .0082491    -4.12   0.000     .9493714    .9817087
       Asian |   1.515394   .9670841     0.65   0.515     .4338219    5.293461
       Black |   .9617083   .1621645    -0.23   0.817     .6910552    1.338363
      Latino |   1.799622   .3777471     2.80   0.005     1.192644    2.715511
       Other |   .3991627   .2362027    -1.55   0.121      .125157    1.273048
   AsianMale |    1.12351   1.034998     0.13   0.899     .1846864    6.834695
   BlackMale |   2.101837   .5434258     2.87   0.004     1.266259    3.488795
  LatinoMale |   1.821869   .6108167     1.79   0.074     .9443552    3.514786
   OtherMale |   2.003382   1.862219     0.75   0.455      .323996    12.38762
------------------------------------------------------------------------------


--------->  region = 11

Iteration 0:   log likelihood = -2446.2189
Iteration 1:   log likelihood = -2319.6715
Iteration 2:   log likelihood =  -2317.023
Iteration 3:   log likelihood = -2317.0164
Iteration 4:   log likelihood = -2317.0164

Multinomial logistic regression                 Number of obs   =       2269
                                                LR chi2(38)     =     258.40
                                                Prob > chi2     =     0.0000
Log likelihood = -2317.0164                     Pseudo R2       =     0.0528

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.001022   .0081607     0.13   0.900     .9851547    1.017145
       exper |   .9930868   .0097337    -0.71   0.479     .9741913    1.012349
 acctrating2 |   1.077284   .1000982     0.80   0.423     .8979223    1.292473
pyperstudlep |   1.000141   .0074462     0.02   0.985     .9856529    1.014842
pyperstude~s |   1.001127   .0040363     0.28   0.780     .9932471    1.009069
pyperstudw~e |   .9937409   .0125831    -0.50   0.620      .969382    1.018712
pyperstudb~k |   .9964213   .0136841    -0.26   0.794     .9699588    1.023606
pyperstudl~o |   .9977815   .0131496    -0.17   0.866     .9723388     1.02389
pyperstudm~e |   .9912652   .0069722    -1.25   0.212     .9776936    1.005025
        male |   1.064525   .1261175     0.53   0.598     .8439399    1.342766
         age |   .9882334   .0081139    -1.44   0.149     .9724578    1.004265
       Asian |   .3646049   .4090912    -0.90   0.369     .0404356    3.287617
       Black |   1.442477   .3065683     1.72   0.085     .9510514    2.187832
      Latino |   1.112392   .3245136     0.37   0.715     .6279719    1.970495
       Other |   .7739204   .4296378    -0.46   0.644     .2607092    2.297398
   AsianMale |   4.938211   7.179943     1.10   0.272     .2857327    85.34527
   BlackMale |   1.898789   .6988233     1.74   0.081     .9230039    3.906157
  LatinoMale |   1.470118   .6046106     0.94   0.349     .6565708    3.291721
   OtherMale |   1.215186   .9772464     0.24   0.809     .2512527    5.877257
-------------+----------------------------------------------------------------
3            |
      tenure |   1.001722   .0074907     0.23   0.818     .9871478    1.016512
       exper |   1.053477   .0109043     5.03   0.000     1.032321    1.075068
 acctrating2 |   1.553351   .1487207     4.60   0.000     1.287579    1.873981
pyperstudlep |   1.010545   .0084225     1.26   0.208     .9941714    1.027189
pyperstude~s |    1.02287   .0044976     5.14   0.000     1.014093    1.031723
pyperstudw~e |   1.020613   .0147395     1.41   0.158     .9921297    1.049915
pyperstudb~k |   1.011347   .0157902     0.72   0.470     .9808671    1.042773
pyperstudl~o |   .9998755   .0152637    -0.01   0.993     .9704023    1.030244
pyperstudm~e |   .9883166   .0079755    -1.46   0.145     .9728079    1.004073
        male |   1.363111   .1701788     2.48   0.013     1.067241    1.741006
         age |   1.002539   .0094161     0.27   0.787     .9842524    1.021165
       Asian |   1.236425   1.118509     0.23   0.815     .2099634    7.281013
```

```
       Black |   1.267244   .3227976     0.93   0.352     .7691992    2.087766
      Latino |   2.014461   .5867483     2.40   0.016     1.138232    3.565223
       Other |   .2953758   .2346397    -1.54   0.125     .0622587     1.40136
   AsianMale |   .7316312   1.139042    -0.20   0.841     .0346016    15.46992
   BlackMale |   2.026235   .8446435     1.69   0.090     .8950829    4.586868
  LatinoMale |   .4213727   .2034726    -1.79   0.073     .1635453    1.085662
   OtherMale |   3.127335   3.228545     1.10   0.269     .4134523    23.65503
-------------------------------------------------------------------------------


---------->  region = 12

Iteration 0:   log likelihood = -880.19959
Iteration 1:   log likelihood = -807.69528
Iteration 2:   log likelihood =   -805.244
Iteration 3:   log likelihood = -804.93596
Iteration 4:   log likelihood = -804.88639
Iteration 5:   log likelihood = -804.87491
Iteration 6:   log likelihood = -804.87209
Iteration 7:   log likelihood = -804.87153
Iteration 8:   log likelihood = -804.87141
Iteration 9:   log likelihood = -804.87138
Iteration 10:  log likelihood = -804.87138

Multinomial logistic regression                 Number of obs   =        818
                                                LR chi2(38)     =     150.66
                                                Prob > chi2     =     0.0000
Log likelihood = -804.87138                     Pseudo R2       =     0.0856

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   .9999511   .0125633    -0.00   0.997     .9756283     1.02488
       exper |   .9998442   .0167694    -0.01   0.993     .9675111    1.033258
 acctrating2 |   1.073007   .1916095     0.39   0.693     .7561389    1.522663
pyperstudlep |   1.008753   .0218669     0.40   0.688     .9667918    1.052534
pyperstude~s |   .9862816   .0074635    -1.83   0.068     .9717614    1.001019
pyperstudw~e |   .8559904    .049119    -2.71   0.007     .7649352    .9578845
pyperstudb~k |   .8782574   .0544964    -2.09   0.036      .777686    .9918349
pyperstudl~o |     .88078   .0499248    -2.24   0.025     .7881688    .9842731
pyperstudm~e |   .9909087   .0094575    -0.96   0.339     .9725446     1.00962
        male |   .9430064   .2002714    -0.28   0.782     .6219283    1.429845
         age |   .9713513    .014744    -1.91   0.055     .9428793    1.000683
       Asian |   2.48e-07   .0004951    -0.01   0.994            0           .
       Black |   1.358051   .4582586     0.91   0.364     .7009513    2.631141
      Latino |    .951498   .5835471    -0.08   0.935     .2860038    3.165511
       Other |   .1610119   .1904645    -1.54   0.123     .0158472    1.635923
   AsianMale |   .2580038   835.9733    -0.00   1.000            0           .
   BlackMale |   .9329681   .5497521    -0.12   0.906     .2939651    2.960996
  LatinoMale |   8.281494   10.27307     1.70   0.088     .7281255    94.19139
   OtherMale |   2.64e-06    .004312    -0.01   0.994            0           .
-------------+-----------------------------------------------------------------
3            |
      tenure |   .9991575   .0110607    -0.08   0.939     .9777124    1.021073
       exper |   1.039181   .0168317     2.37   0.018      1.00671      1.0727
 acctrating2 |    2.05141   .3115745     4.73   0.000     1.523243    2.762712
pyperstudlep |   1.032718   .0216447     1.54   0.125     .9911548    1.076024
pyperstude~s |   1.016917   .0078854     2.16   0.031     1.001579    1.032491
pyperstudw~e |   .9225466   .0572827    -1.30   0.194     .8168374    1.041936
pyperstudb~k |   .9261929   .0612045    -1.16   0.246     .8136778    1.054267
pyperstudl~o |   .9063613   .0568684    -1.57   0.117     .8014821    1.024965
pyperstudm~e |   .9751472   .0116217    -2.11   0.035     .9526331    .9981934
        male |   1.529638   .3041608     2.14   0.033     1.035933    2.258634
         age |   .9797966    .014602    -1.37   0.171     .9515912    1.008838
```

```
       Asian |   3.030091    4.43144     0.76   0.448     .1724218    53.24992
       Black |   1.161884   .4616815     0.38   0.706      .533252    2.531586
      Latino |   1.079183   .7076841     0.12   0.907     .2984778    3.901919
       Other |   1.93e-07   .0002418    -0.01   0.990            0           .
   AsianMale |   5.87e-08   .0001424    -0.01   0.995            0           .
   BlackMale |   1.175984   .7117556     0.27   0.789      .359102      3.8511
  LatinoMale |   1.460137   2.300835     0.24   0.810     .0665425     32.0397
   OtherMale |    7121096   8.91e+09     0.01   0.990            0           .
------------------------------------------------------------------------------


--------->  region = 13

Iteration 0:   log likelihood = -1506.5266
Iteration 1:   log likelihood = -1423.0188
Iteration 2:   log likelihood = -1420.7099
Iteration 3:   log likelihood = -1420.4531
Iteration 4:   log likelihood = -1420.4116
Iteration 5:   log likelihood =  -1420.402
Iteration 6:   log likelihood = -1420.3997
Iteration 7:   log likelihood = -1420.3993
Iteration 8:   log likelihood = -1420.3992
Iteration 9:   log likelihood = -1420.3992

Multinomial logistic regression                 Number of obs   =       1405
                                                LR chi2(38)     =     172.25
                                                Prob > chi2     =     0.0000
Log likelihood = -1420.3992                     Pseudo R2       =     0.0572

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.013172   .0109798     1.21   0.227     .9918787    1.034922
       exper |   .9750626   .0114724    -2.15   0.032     .9528343    .9978094
 acctrating2 |   1.051834   .1327469     0.40   0.689     .8213364    1.347017
pyperstudlep |   1.006559   .0082791     0.79   0.427     .9904621    1.022917
pyperstude~s |   .9939002   .0067571    -0.90   0.368     .9807443    1.007232
pyperstudw~e |   .9491478   .0190762    -2.60   0.009      .912486    .9872826
pyperstudb~k |   .9509657   .0226646    -2.11   0.035     .9075655    .9964413
pyperstudl~o |   .9552173    .020327    -2.15   0.031     .9161964        .9959
pyperstudm~e |   1.002636    .010266     0.26   0.797      .982716    1.022961
        male |    1.22582   .1986441     1.26   0.209     .8922561    1.684085
         age |   .9946358   .0100631    -0.53   0.595     .9751068    1.014556
       Asian |   2.530686   2.364835     0.99   0.320     .4053414    15.79994
       Black |   2.367502   .6875198     2.97   0.003     1.339993    4.182908
      Latino |   1.800838   .4074565     2.60   0.009     1.155799    2.805867
       Other |   4.213215   3.588419     1.69   0.091     .7936709    22.36592
   AsianMale |    6473037   1.57e+10     0.01   0.995            0           .
   BlackMale |    1.32088   .6715568     0.55   0.584     .4876395    3.577899
  LatinoMale |   .9529954   .3480008    -0.13   0.895     .4658666    1.949486
   OtherMale |   .3035044    .332927    -1.09   0.277     .0353546     2.60546
-------------+----------------------------------------------------------------
3            |
      tenure |   1.028168   .0105177     2.72   0.007     1.007759    1.048991
       exper |   1.019564   .0128739     1.53   0.125     .9946417    1.045112
 acctrating2 |   1.384654   .1754734     2.57   0.010     1.080118    1.775055
pyperstudlep |   1.010416   .0087271     1.20   0.230     .9934552    1.027666
pyperstude~s |   1.026712   .0073058     3.70   0.000     1.012493    1.041132
pyperstudw~e |   .9601941   .0214395    -1.82   0.069     .9190796    1.003148
pyperstudb~k |   .9487389   .0254606    -1.96   0.050     .9001267    .9999765
pyperstudl~o |   .9427504   .0222724    -2.50   0.013     .9000926    .9874299
pyperstudm~e |   .9685597   .0143123    -2.16   0.031     .9409104    .9970214
        male |   .9361265   .1564384    -0.39   0.693      .674665    1.298916
         age |   1.003689   .0113601     0.33   0.745     .9816689    1.026203
```

```
       Asian |   1.080803   1.352608     0.06   0.950     .0929995    12.56065
       Black |   .4906395    .205686    -1.70   0.089     .2157355    1.115844
      Latino |   1.318621   .3217954     1.13   0.257     .8173221    2.127387
       Other |    1.77954   1.825584     0.56   0.574     .2382768    13.29027
   AsianMale |    2.13658   8482.362     0.00   1.000            0           .
   BlackMale |   5.648086   3.592492     2.72   0.006     1.623643    19.64772
  LatinoMale |   1.312136   .5302809     0.67   0.501      .594262    2.897208
   OtherMale |   4.27e-07   .0003809    -0.02   0.987            0           .
-------------------------------------------------------------------------------


---------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -247.82971
Iteration 1:   log likelihood = -219.04273
Iteration 2:   log likelihood = -211.57289
Iteration 3:   log likelihood = -209.21491
Iteration 4:   log likelihood = -208.70513
Iteration 5:   log likelihood = -208.67458
Iteration 6:   log likelihood = -208.66848
Iteration 7:   log likelihood = -208.66714
Iteration 8:   log likelihood = -208.66684
Iteration 9:   log likelihood = -208.66677
Iteration 10:  log likelihood = -208.66676

Multinomial logistic regression                 Number of obs   =        265
                                                LR chi2(32)     =      78.33
                                                Prob > chi2     =     0.0000
Log likelihood = -208.66676                     Pseudo R2       =     0.1580

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |    1.03635   .0370709     1.00   0.318     .9661813    1.111615
       exper |   .9835681   .0521427    -0.31   0.755     .8865005    1.091264
 acctrating2 |   .4076908   .2161623    -1.69   0.091     .1442162    1.152518
pyperstudlep |   .9700185   .1323894    -0.22   0.824      .742347    1.267515
pyperstude~s |   .9479177   .0219595    -2.31   0.021     .9058404    .9919495
pyperstudw~e |    1.03138   .1026359     0.31   0.756     .8486195    1.253501
pyperstudb~k |   1.074916    .132421     0.59   0.558     .8443319    1.368471
pyperstudl~o |    1.06653   .1067616     0.64   0.520     .8765286    1.297716
pyperstudm~e |   1.056567   .0441707     1.32   0.188     .9734462    1.146786
        male |    3.03141   1.824076     1.84   0.065     .9320845     9.85903
         age |   1.015655   .0475882     0.33   0.740     .9265385    1.113343
       Asian |  (omitted)
       Black |   4.61e-06   .0058083    -0.01   0.992            0           .
      Latino |   6.579485   9.866084     1.26   0.209      .348174    124.3333
       Other |   18.52977   53896.15     0.00   0.999            0           .
   AsianMale |  (omitted)
   BlackMale |   121092.5   2.91e+08     0.00   0.996            0           .
  LatinoMale |   1.103598   1.859015     0.06   0.953     .0406404    29.96837
   OtherMale |  (omitted)
-------------+-----------------------------------------------------------------
3            |
      tenure |   1.005978    .020742     0.29   0.773     .9661348    1.047464
       exper |   1.071209   .0332691     2.21   0.027     1.007948    1.138441
 acctrating2 |   1.529025   .3378159     1.92   0.055     .9916402    2.357628
pyperstudlep |   1.052236   .0632128     0.85   0.397     .9353567    1.183719
pyperstude~s |   1.017092   .0123547     1.40   0.163      .993163    1.041597
pyperstudw~e |   1.258191   .2344649     1.23   0.218     .8732217    1.812878
pyperstudb~k |   1.218319   .2398145     1.00   0.316     .8283429    1.791892
```

```
pyperstudl~o |   1.261832   .2354535     1.25   0.213     .8753272    1.819001
pyperstudm~e |   1.013422   .0242588     0.56   0.578     .9669737    1.062101
        male |   2.129628   .6786585     2.37   0.018     1.140374    3.977042
         age |   .9514641   .0253552    -1.87   0.062     .9030443     1.00248
       Asian |  (omitted)
       Black |   3.151115   4.687043     0.77   0.440     .1707524    58.15158
      Latino |   .9877025   1.121635    -0.01   0.991     .1066601    9.146407
       Other |    4164533   4.82e+09     0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |   286754.3   2.34e+08     0.02   0.988            0           .
  LatinoMale |   .2945075   .4985809    -0.72   0.470     .0106677    8.130586
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 15

note: Asian omitted because of collinearity
note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -283.69024
Iteration 1:   log likelihood = -251.74922
Iteration 2:   log likelihood = -248.47897
Iteration 3:   log likelihood = -248.31378
Iteration 4:   log likelihood =  -248.2885
Iteration 5:   log likelihood = -248.28392
Iteration 6:   log likelihood = -248.28291
Iteration 7:   log likelihood = -248.28266
Iteration 8:   log likelihood = -248.28261
Iteration 9:   log likelihood =  -248.2826

Multinomial logistic regression                 Number of obs   =        280
                                                LR chi2(30)     =      70.82
                                                Prob > chi2     =     0.0000
Log likelihood =  -248.2826                     Pseudo R2       =     0.1248

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.069691   .0412693     1.75   0.081     .9917869    1.153714
       exper |   .9254502   .0409503    -1.75   0.080     .8485709    1.009295
 acctrating2 |    .597705   .2720128    -1.13   0.258     .2449678     1.45836
pyperstudlep |   .9638911   .0391769    -0.90   0.366     .8900846    1.043818
pyperstude~s |   1.005519   .0166634     0.33   0.740      .973384    1.038715
pyperstudw~e |    .554568   .1718415    -1.90   0.057     .3021321    1.017918
pyperstudb~k |    .552299   .1827504    -1.79   0.073     .2887486    1.056401
pyperstudl~o |   .5543437   .1724809    -1.90   0.058     .3012538     1.02006
pyperstudm~e |   1.010448   .0256346     0.41   0.682      .961434    1.061961
        male |   1.880205    1.02154     1.16   0.245     .6482405    5.453487
         age |   1.036046   .0327604     1.12   0.263     .9737863    1.102287
       Asian |  (omitted)
       Black |   2.71e+08   7.93e+11     0.01   0.995            0           .
      Latino |   5.607428   3.779204     2.56   0.011     1.496527    21.01081
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   .0093126   27.85033    -0.00   0.999            0           .
  LatinoMale |   .5439562   .4769744    -0.69   0.487     .0975389    3.033543
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9732322   .0194892    -1.35   0.175     .9357741     1.01219
       exper |   1.077985    .030845     2.62   0.009     1.019194    1.140168
 acctrating2 |   1.492711   .3820883     1.57   0.118     .9038455    2.465229
```

```
pyperstudlep |   1.025934   .0287639     0.91   0.361      .971079    1.083888
pyperstude~s |   1.014386   .0116469     1.24   0.213     .9918139    1.037473
pyperstudw~e |    .857561   .1957862    -0.67   0.501     .5481895    1.341527
pyperstudb~k |    .827792   .2012101    -0.78   0.437     .5140685    1.332973
pyperstudl~o |   .8447319   .1940089    -0.73   0.463     .5385477    1.324993
pyperstudm~e |   1.020755   .0174107     1.20   0.228     .9871949    1.055456
        male |   .9794423   .3233326    -0.06   0.950     .5128389    1.870582
         age |   .9759619   .0247674    -0.96   0.338     .9286062    1.025733
       Asian |  (omitted)
       Black |   .9645918   3785.711    -0.00   1.000            0           .
      Latino |   .7194896   .4173189    -0.57   0.570     .2308394    2.242534
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |    1672943   6.65e+09     0.00   0.997            0           .
  LatinoMale |   1.701531   1.381295     0.65   0.513     .3466077    8.352981
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 16

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -496.28686
Iteration 1:   log likelihood =  -434.9081
Iteration 2:   log likelihood = -432.68307
Iteration 3:   log likelihood = -432.51626
Iteration 4:   log likelihood = -432.48134
Iteration 5:   log likelihood = -432.47371
Iteration 6:   log likelihood = -432.47232
Iteration 7:   log likelihood = -432.47218
Iteration 8:   log likelihood = -432.47215
Iteration 9:   log likelihood = -432.47214

Multinomial logistic regression                 Number of obs   =        461
                                                LR chi2(34)     =     127.63
                                                Prob > chi2     =     0.0000
Log likelihood = -432.47214                     Pseudo R2       =     0.1286

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.037933   .0230528     1.68   0.094     .9937197    1.084114
       exper |   .9248569   .0261418    -2.76   0.006     .8750134    .9775396
 acctrating2 |   .6809814   .1583404    -1.65   0.098     .4317333    1.074125
pyperstudlep |   1.005179   .0205858     0.25   0.801      .965631    1.046348
pyperstude~s |    .978226   .0091934    -2.34   0.019     .9603722    .9964117
pyperstudw~e |   .9548322   .0465939    -0.95   0.344      .867741    1.050664
pyperstudb~k |    .984616   .0525772    -0.29   0.772     .8867757    1.093251
pyperstudl~o |   .9693222    .046613    -0.65   0.517     .8821357    1.065126
pyperstudm~e |   1.054202    .020381     2.73   0.006     1.015003    1.094915
        male |   1.065634   .2979809     0.23   0.820      .616011    1.843434
         age |   .9871821   .0218188    -0.58   0.559     .9453312    1.030886
       Asian |  (omitted)
       Black |   .4381034   .5295071    -0.68   0.495     .0410001    4.681323
      Latino |   3.950138   2.708459     2.00   0.045     1.030329    15.14429
       Other |   .5802064   .7768222    -0.41   0.684     .0420661    8.002628
   AsianMale |  (omitted)
   BlackMale |   3.93e-07   .0004885    -0.01   0.991            0           .
  LatinoMale |   .2214436   .2575026    -1.30   0.195     .0226702    2.163073
   OtherMale |   2.70e+08   1.24e+12     0.00   0.997            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.015328   .0168504     0.92   0.359     .9828336    1.048898
```

```
       exper |   1.047184   .0257077     1.88   0.060     .9979907    1.098802
 acctrating2 |   1.715606   .3201945     2.89   0.004     1.190014    2.473334
pyperstudlep |   1.055966   .0187359     3.07   0.002     1.019875    1.093334
pyperstude~s |   1.007621   .0077898     0.98   0.326     .9924688    1.023005
pyperstudw~e |    1.02106   .0480595     0.44   0.658      .931079    1.119736
pyperstudb~k |   1.022391   .0515579     0.44   0.661     .9261723    1.128605
pyperstudl~o |   1.006037   .0465565     0.13   0.897     .9188036    1.101552
pyperstudm~e |    1.00361   .0198735     0.18   0.856     .9654052    1.043328
        male |    2.44049   .6162621     3.53   0.000     1.487768    4.003306
         age |   .9572852   .0211411    -1.98   0.048     .9167334    .9996308
       Asian |  (omitted)
       Black |   1.476934   1.471286     0.39   0.695     .2096111    10.40658
      Latino |    1.19001   .9375842     0.22   0.825     .2540427    5.574355
       Other |   4.87e-07   .0005263    -0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |    .214017   .3617747    -0.91   0.362     .0077907    5.879237
  LatinoMale |   1.212845   1.364105     0.17   0.864     .1337969    10.99422
   OtherMale |   854776.8   5.94e+09     0.00   0.998            0           .
-------------------------------------------------------------------------------


---------->  region = 17

note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -457.29442
Iteration 1:   log likelihood = -408.24065
Iteration 2:   log likelihood = -406.42032
Iteration 3:   log likelihood = -406.33105
Iteration 4:   log likelihood = -406.31153
Iteration 5:   log likelihood = -406.30676
Iteration 6:   log likelihood = -406.30583
Iteration 7:   log likelihood = -406.30565
Iteration 8:   log likelihood = -406.30564

Multinomial logistic regression                 Number of obs   =        450
                                                LR chi2(32)     =     101.98
                                                Prob > chi2     =     0.0000
Log likelihood = -406.30564                     Pseudo R2       =     0.1115

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9931666   .0221382    -0.31   0.758     .9507107    1.037519
       exper |   1.034447   .0295723     1.18   0.236     .9780802    1.094062
 acctrating2 |   1.103939   .3359646     0.32   0.745     .6079901    2.004441
pyperstudlep |   .9372971   .0470592    -1.29   0.197     .8494556    1.034222
pyperstude~s |   .9577112   .0130942    -3.16   0.002     .9323879    .9837223
pyperstudw~e |   1.085428   .1477889     0.60   0.547     .8311969    1.417419
pyperstudb~k |   1.125618   .1544847     0.86   0.389     .8601389    1.473037
pyperstudl~o |   1.127514   .1548007     0.87   0.382     .8615041    1.475661
pyperstudm~e |   1.008229   .0256656     0.32   0.747     .9591602    1.059809
        male |   1.584274   .5063637     1.44   0.150     .8467798    2.964083
         age |    .979476   .0251357    -0.81   0.419     .9314294    1.030001
       Asian |   9.52e-07   .0017393    -0.01   0.994            0           .
       Black |   2.33e-06   .0016151    -0.02   0.985            0           .
      Latino |   .4824782   .5279839    -0.67   0.505     .0564929    4.120613
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   697335.5   4.84e+08     0.02   0.985            0           .
  LatinoMale |   4.698084   6.007392     1.21   0.226     .3832639    57.58953
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
```

```
3            |
      tenure |   .9916279   .0162173    -0.51   0.607     .9603465    1.023928
       exper |   1.058434   .0232137     2.59   0.010       1.0139    1.104924
 acctrating2 |   1.226814   .2687129     0.93   0.351     .7986145    1.884604
pyperstudlep |   .9973945    .021557    -0.12   0.904      .956026    1.040553
pyperstude~s |   1.023456   .0107785     2.20   0.028     1.002547    1.044801
pyperstudw~e |    1.05924   .1182773     0.52   0.606     .8510342    1.318383
pyperstudb~k |   1.040914   .1178674     0.35   0.723     .8337376    1.299572
pyperstudl~o |    1.06116   .1191749     0.53   0.597     .8515023    1.322441
pyperstudm~e |   .9520486   .0189447    -2.47   0.014     .9156324    .9899131
        male |   2.849515   .7319793     4.08   0.000     1.722327    4.714399
         age |   .9852048   .0198858    -0.74   0.460     .9469902    1.024961
       Asian |   4.73e-06   .0056813    -0.01   0.992            0           .
       Black |   1.933611   2.466266     0.52   0.605     .1587398    23.55334
      Latino |   2.749924   1.526927     1.82   0.068     .9261496    8.165073
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   2.326662    4.03505     0.49   0.626     .0777183    69.65353
  LatinoMale |    .986081   .7896127    -0.02   0.986     .2052607    4.737175
   OtherMale |  (omitted)
-------------------------------------------------------------------------------


---------->  region = 18

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -410.74157
Iteration 1:   log likelihood = -374.41662
Iteration 2:   log likelihood = -373.19796
Iteration 3:   log likelihood = -373.17397
Iteration 4:   log likelihood = -373.16862
Iteration 5:   log likelihood = -373.16749
Iteration 6:   log likelihood = -373.16729
Iteration 7:   log likelihood = -373.16726

Multinomial logistic regression                 Number of obs   =        394
                                                LR chi2(34)     =      75.15
                                                Prob > chi2     =     0.0001
Log likelihood = -373.16726                     Pseudo R2       =     0.0915

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |    .981199   .0226225    -0.82   0.410     .9378465    1.026555
       exper |   1.005453   .0269439     0.20   0.839     .9540066    1.059673
 acctrating2 |   .5390733    .180107    -1.85   0.064     .2800639     1.03762
pyperstudlep |   1.043892   .0200843     2.23   0.026      1.00526    1.084008
pyperstude~s |   .9763804   .0145602    -1.60   0.109      .948256    1.005339
pyperstudw~e |   .6544253   .1264682    -2.19   0.028     .4480895    .9557745
pyperstudb~k |   .7030872   .1372259    -1.80   0.071     .4795953    1.030726
pyperstudl~o |    .664854   .1274266    -2.13   0.033     .4566507    .9679844
pyperstudm~e |   1.028776   .0172477     1.69   0.091     .9955202    1.063142
        male |   .9561106   .3379417    -0.13   0.899     .4782412    1.911478
         age |   .9882548   .0221267    -0.53   0.598     .9458251    1.032588
       Asian |  (omitted)
       Black |   6.305898   7.509864     1.55   0.122     .6109815    65.08274
      Latino |   1.868461   .9146196     1.28   0.202      .715842    4.876978
       Other |   1.115944   1437.578     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   .7342217   1.284922    -0.18   0.860     .0237785    22.67092
  LatinoMale |   1.304438   .8500792     0.41   0.683     .3636723    4.678821
   OtherMale |    9390699   1.81e+10     0.01   0.993            0           .
-------------+-----------------------------------------------------------------
```

```
3            |
      tenure |   1.006157   .0181082     0.34   0.733     .9712843    1.042282
       exper |   1.048535   .0255283     1.95   0.052     .9996752    1.099782
 acctrating2 |   1.969491   .4937685     2.70   0.007     1.204898    3.219272
pyperstudlep |   1.017575   .0178458     0.99   0.320     .9831924     1.05316
pyperstude~s |   1.019654   .0122659     1.62   0.106     .9958947    1.043981
pyperstudw~e |   .9520687   .1717231    -0.27   0.785      .668557    1.355808
pyperstudb~k |   .9629889   .1778388    -0.20   0.838     .6705431     1.38298
pyperstudl~o |   .9435586   .1695017    -0.32   0.746     .6635265    1.341774
pyperstudm~e |   1.000299   .0176944     0.02   0.987     .9662125    1.035587
        male |   1.540749   .4505235     1.48   0.139     .8686317    2.732926
         age |    .964062   .0212458    -1.66   0.097     .9233074    1.006616
       Asian |  (omitted)
       Black |   5.494867   6.578324     1.42   0.155     .5259191    57.41105
      Latino |    1.22304   .5349447     0.46   0.645     .5189602    2.882353
       Other |   344382.9   2.43e+08     0.02   0.986            0           .
   AsianMale |  (omitted)
   BlackMale |   .4560498   .7941998    -0.45   0.652     .0150198    13.84712
  LatinoMale |   .9611483   .5550222    -0.07   0.945     .3099258    2.980733
   OtherMale |   3.42e-06   .0081193    -0.01   0.996            0           .
-------------------------------------------------------------------------------


---------->  region = 19

Iteration 0:   log likelihood = -797.61835
Iteration 1:   log likelihood = -728.84813
Iteration 2:   log likelihood =  -725.6924
Iteration 3:   log likelihood =  -725.5741
Iteration 4:   log likelihood = -725.54653
Iteration 5:   log likelihood = -725.54066
Iteration 6:   log likelihood = -725.53943
Iteration 7:   log likelihood = -725.53916
Iteration 8:   log likelihood = -725.53909
Iteration 9:   log likelihood = -725.53908

Multinomial logistic regression                 Number of obs   =        736
                                                LR chi2(38)     =     144.16
                                                Prob > chi2     =     0.0000
Log likelihood = -725.53908                     Pseudo R2       =     0.0904

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.011387   .0139459     0.82   0.412     .9844198    1.039094
       exper |    1.02535   .0179784     1.43   0.153     .9907116    1.061199
 acctrating2 |   .8075625   .1673089    -1.03   0.302     .5380544    1.212065
pyperstudlep |   1.007777   .0058341     1.34   0.181     .9964067    1.019277
pyperstude~s |   .9969452   .0097222    -0.31   0.754      .978071    1.016184
pyperstudw~e |   .9676101   .1037279    -0.31   0.759     .7842446    1.193849
pyperstudb~k |   1.024192   .1191688     0.21   0.837     .8153434    1.286536
pyperstudl~o |   .9777214   .1008454    -0.22   0.827     .7987656     1.19677
pyperstudm~e |   1.017774   .0127031     1.41   0.158     .9931787    1.042979
        male |   1.193215   .3567324     0.59   0.555     .6641059    2.143879
         age |   .9814145   .0142976    -1.29   0.198      .953788    1.009841
       Asian |    3508515   6.18e+09     0.01   0.993            0           .
       Black |   .1637242   .1773293    -1.67   0.095     .0195965    1.367877
      Latino |   1.308059   .3319581     1.06   0.290     .7954451     2.15102
       Other |   1.415092   2.061405     0.24   0.812     .0814359    24.58974
   AsianMale |   1.33e-07   .0005681    -0.00   0.997            0           .
   BlackMale |   4.658763   5.968901     1.20   0.230     .3781762    57.39144
  LatinoMale |   .8989863   .3361947    -0.28   0.776      .431945    1.871017
   OtherMale |   .8686317   1.797194    -0.07   0.946     .0150558    50.11484
-------------+-----------------------------------------------------------------
```

```
3             |
      tenure |    1.02684   .0150144     1.81   0.070     .9978302    1.056694
       exper |   1.107653   .0239829     4.72   0.000      1.06163     1.15567
 acctrating2 |   1.094763   .2466345     0.40   0.688     .7039743    1.702487
pyperstudlep |   1.034141   .0070792     4.90   0.000     1.020359     1.04811
pyperstude~s |   1.015098   .0112628     1.35   0.177     .9932612    1.037414
pyperstudw~e |   1.029077   .1288653     0.23   0.819     .8051135    1.315343
pyperstudb~k |   1.055859   .1451649     0.40   0.693     .8064522      1.3824
pyperstudl~o |    .992283   .1205493    -0.06   0.949     .7820342    1.259057
pyperstudm~e |   .9794268    .018069    -1.13   0.260     .9446448    1.015489
        male |    1.24472   .4176062     0.65   0.514      .644899    2.402434
         age |   .9692202   .0184099    -1.65   0.100     .9338008    1.005983
       Asian |   1.233118    3446.58     0.00   1.000            0           .
       Black |   .5971292   .4524748    -0.68   0.496     .1352291    2.636735
      Latino |   .9475704   .2722365    -0.19   0.851     .5395873     1.66403
       Other |   1.48e-06   .0014112    -0.01   0.989            0           .
   AsianMale |   553275.1   2.15e+09     0.00   0.997            0           .
   BlackMale |    3.08656   3.208479     1.08   0.278     .4023933    23.67547
  LatinoMale |   .8227864   .3576121    -0.45   0.654     .3510143    1.928632
   OtherMale |   2.621367   3531.519     0.00   0.999            0           .
------------------------------------------------------------------------------


---------->  region = 20

Iteration 0:   log likelihood = -2077.1174
Iteration 1:   log likelihood = -1971.4581
Iteration 2:   log likelihood = -1967.0072
Iteration 3:   log likelihood = -1966.5191
Iteration 4:   log likelihood = -1966.4382
Iteration 5:   log likelihood = -1966.4299
Iteration 6:   log likelihood = -1966.4282
Iteration 7:   log likelihood = -1966.4278
Iteration 8:   log likelihood = -1966.4277
Iteration 9:   log likelihood = -1966.4277

Multinomial logistic regression                 Number of obs   =       2049
                                                LR chi2(38)     =     221.38
                                                Prob > chi2     =     0.0000
Log likelihood = -1966.4277                     Pseudo R2       =     0.0533

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.004926   .0082735     0.60   0.551     .9888408    1.021274
       exper |   1.010247   .0106496     0.97   0.333     .9895882    1.031337
 acctrating2 |   1.009711   .1105063     0.09   0.930     .8147765    1.251283
pyperstudlep |   .9843078   .0076317    -2.04   0.041      .969463      .99938
pyperstude~s |   .9961943   .0058443    -0.65   0.516     .9848052    1.007715
pyperstudw~e |   1.024491   .0437055     0.57   0.571     .9423132    1.113835
pyperstudb~k |   1.022835   .0463411     0.50   0.618     .9359242    1.117817
pyperstudl~o |   1.029656   .0446582     0.67   0.500     .9457444    1.121012
pyperstudm~e |   1.005948   .0075232     0.79   0.428     .9913103    1.020802
        male |   1.680217   .2494123     3.50   0.000     1.256066    2.247595
         age |    .971411   .0087693    -3.21   0.001     .9543747    .9887515
       Asian |   .3630263   .3954288    -0.93   0.352       .04293    3.069835
       Black |   1.497138   .4354046     1.39   0.165     .8466644    2.647355
      Latino |   1.219061   .1940307     1.24   0.213       .89237    1.665353
       Other |   1.363071   1.006957     0.42   0.675     .3204058    5.798777
   AsianMale |   3.51e+07   1.05e+11     0.01   0.995            0           .
   BlackMale |   1.048934   .4747501     0.11   0.916     .4320081    2.546854
  LatinoMale |   1.019835    .241206     0.08   0.934     .6415169    1.621256
   OtherMale |   3.66e-07   .0002839    -0.02   0.985            0           .
-------------+----------------------------------------------------------------
```

```
3            |
      tenure |    1.01631   .0083066     1.98   0.048     1.000159    1.032722
       exper |   1.088385   .0144757     6.37   0.000      1.06038     1.11713
 acctrating2 |   1.157832   .1375379     1.23   0.217     .9173436    1.461366
pyperstudlep |   1.016348   .0072409     2.28   0.023     1.002255     1.03064
pyperstude~s |   1.032712   .0065863     5.05   0.000     1.019883    1.045702
pyperstudw~e |   1.006626   .0450925     0.15   0.883     .9220145    1.099001
pyperstudb~k |   .9743111   .0464333    -0.55   0.585     .8874246    1.069705
pyperstudl~o |   .9751667   .0445102    -0.55   0.582     .8917167    1.066426
pyperstudm~e |   .9834813   .0096246    -1.70   0.089     .9647972    1.002527
        male |    1.50813   .2490793     2.49   0.013      1.09108    2.084593
         age |    .948463   .0115362    -4.35   0.000     .9261198    .9713453
       Asian |   6.22e-07   .0005435    -0.02   0.987            0           .
       Black |   1.482746   .4602828     1.27   0.204     .8069221    2.724594
      Latino |   .8986566   .1545878    -0.62   0.534     .6414595    1.258978
       Other |   1.03e-06   .0008251    -0.02   0.986            0           .
   AsianMale |    1388560   7.92e+09     0.00   0.998            0           .
   BlackMale |    .711806   .3997958    -0.61   0.545     .2367404    2.140183
  LatinoMale |   1.004027   .2696508     0.01   0.988     .5931148    1.699621
   OtherMale |    1627215   1.31e+09     0.02   0.986            0           .
------------------------------------------------------------------------------
by pyschooltype:
. bysort pyschooltype: mlogit admin  tenure exper  acctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlati
> no pyperstudmobile male age Asian Black Latino Other AsianMale BlackMale LatinoMale
OtherMale if validcert2004a==1, rrr iter(20)


---------->  pyschooltype =

note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood =  -296.6778
Iteration 1:   log likelihood = -261.13994
Iteration 2:   log likelihood =  -259.6833
Iteration 3:   log likelihood = -259.45168
Iteration 4:   log likelihood = -259.40644
Iteration 5:   log likelihood = -259.39654
Iteration 6:   log likelihood = -259.39493
Iteration 7:   log likelihood = -259.39454
Iteration 8:   log likelihood = -259.39446
Iteration 9:   log likelihood = -259.39444

Multinomial logistic regression                 Number of obs   =        273
                                                LR chi2(36)     =      74.57
                                                Prob > chi2     =     0.0002
Log likelihood = -259.39444                     Pseudo R2       =     0.1257

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9968326   .0258791    -0.12   0.903     .9473794    1.048867
       exper |   1.110009    .035792     3.24   0.001     1.042029    1.182424
 acctrating2 |    .886691   .2197995    -0.49   0.628     .5454691    1.441367
pyperstudlep |   1.011792   .0123952     0.96   0.339     .9877876    1.036381
pyperstude~s |   1.012302   .0145517     0.85   0.395     .9841788    1.041228
pyperstudw~e |   .9524579   .0462793    -1.00   0.316     .8659374    1.047623
pyperstudb~k |   .9615611   .0520048    -0.72   0.469     .8648498    1.069087
pyperstudl~o |   .9398155   .0481558    -1.21   0.226     .8500166    1.039101
pyperstudm~e |   1.003279   .0165372     0.20   0.843     .9713844     1.03622
        male |   .8554264   .3661494    -0.36   0.715     .3696933    1.979355
         age |   .9464729   .0278632    -1.87   0.062     .8934077     1.00269
       Asian |   1.25e-06   .0012638    -0.01   0.989            0           .
       Black |    1.10794   .8665692     0.13   0.896     .2391961    5.131907
      Latino |   2.398221    1.16079     1.81   0.071     .9287294    6.192828
```

```
       Other |   2.486271   3.638125     0.62   0.534     .1412529    43.76223
   AsianMale |   812531.6   3.20e+09     0.00   0.997            0           .
   BlackMale |   976303.6   5.53e+08     0.02   0.981            0           .
  LatinoMale |   .8356123   .7049914    -0.21   0.831     .1599046    4.366652
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.055693   .0278292     2.06   0.040     1.002534    1.111671
       exper |   1.085347   .0366101     2.43   0.015     1.015913    1.159526
 acctrating2 |    .729985   .1969752    -1.17   0.243     .4301603     1.23879
pyperstudlep |    1.02684   .0141065     1.93   0.054     .9995603    1.054864
pyperstude~s |   1.018027   .0150657     1.21   0.227     .9889232    1.047988
pyperstudw~e |   1.051415    .061185     0.86   0.389     .9380802    1.178441
pyperstudb~k |   1.035655    .066798     0.54   0.587     .9126709    1.175212
pyperstudl~o |   1.014678   .0619314     0.24   0.811     .9002737     1.14362
pyperstudm~e |   .9995409   .0172427    -0.03   0.979     .9663107    1.033914
        male |   .7657492   .3604793    -0.57   0.571     .3043549    1.926606
         age |   .9929364   .0298483    -0.24   0.814     .9361249    1.053196
       Asian |   6.493524   10.18187     1.19   0.233     .3004649    140.3354
       Black |   2.006892   1.650115     0.85   0.397     .4005395    10.05547
      Latino |   1.316409   .7545129     0.48   0.631     .4280716    4.048233
       Other |   1.670917   2.579169     0.33   0.739     .0811092    34.42228
   AsianMale |    1188086   2.95e+09     0.01   0.996            0           .
   BlackMale |    1372250   7.77e+08     0.02   0.980            0           .
  LatinoMale |   2.920701   2.648589     1.18   0.237      .493843    17.27369
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  pyschooltype = B

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -347.28728
Iteration 1:   log likelihood = -320.30661
Iteration 2:   log likelihood = -308.40708
Iteration 3:   log likelihood = -307.00325
Iteration 4:   log likelihood = -306.97715
Iteration 5:   log likelihood = -306.97334
Iteration 6:   log likelihood = -306.97273
Iteration 7:   log likelihood = -306.97258
Iteration 8:   log likelihood = -306.97255
Iteration 9:   log likelihood = -306.97254

Multinomial logistic regression                 Number of obs   =        400
                                                LR chi2(34)     =      80.63
                                                Prob > chi2     =     0.0000
Log likelihood = -306.97254                     Pseudo R2       =     0.1161

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.083523   .0388273     2.24   0.025     1.010033    1.162359
       exper |   .9398735   .0374048    -1.56   0.119     .8693479    1.016121
 acctrating2 |   .6561453   .2773947    -1.00   0.319     .2865118    1.502649
pyperstudlep |   .9803703   .0328218    -0.59   0.554     .9181058    1.046857
pyperstude~s |   .9521218   .0157297    -2.97   0.003      .921786    .9834559
pyperstudw~e |   .9668746   .0323943    -1.01   0.315     .9054226    1.032497
pyperstudb~k |    1.04014   .0438985     0.93   0.351     .9575631    1.129838
pyperstudl~o |   1.012597   .0400677     0.32   0.752     .9370338    1.094254
pyperstudm~e |   .9697719   .0177542    -1.68   0.094     .9355912    1.005201
        male |   .5787948   .2752106    -1.15   0.250     .2279227    1.469812
         age |   .9651904   .0290329    -1.18   0.239      .909932    1.023805
       Asian |   3.34e-06   .0052531    -0.01   0.994            0           .
```

```
       Black |   .4854336   .4123694    -0.85   0.395     .0918429     2.56575
      Latino |   1.511939   1.611019     0.39   0.698      .187306    12.20441
       Other |   3.655832   7.889775     0.60   0.548     .0532083    251.1846
   AsianMale |  (omitted)
   BlackMale |    2.23866   2.796874     0.65   0.519     .1934361    25.90828
  LatinoMale |   1.339753   2.194656     0.18   0.858     .0540341    33.21863
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9751453   .0168405    -1.46   0.145     .9426908    1.008717
       exper |   1.015603    .018843     0.83   0.404     .9793354    1.053215
 acctrating2 |   .7953362   .1724195    -1.06   0.291     .5200203    1.216414
pyperstudlep |   1.031775   .0177425     1.82   0.069     .9975799    1.067142
pyperstude~s |   .9877794    .008389    -1.45   0.148     .9714735    1.004359
pyperstudw~e |   1.049137   .0430781     1.17   0.243     .9680137    1.137059
pyperstudb~k |   1.069458   .0467356     1.54   0.124     .9816707    1.165095
pyperstudl~o |   1.054984   .0446884     1.26   0.206     .9709337     1.14631
pyperstudm~e |   .9834401    .011398    -1.44   0.150     .9613523    1.006035
        male |   1.171958   .2907666     0.64   0.522      .720653    1.905891
         age |   .9728294   .0165399    -1.62   0.105      .940946    1.005793
       Asian |   4.07e-06   .0036037    -0.01   0.989            0           .
       Black |   .3986581   .3526861    -1.04   0.299     .0703974    2.257586
      Latino |   .2202667   .2609639    -1.28   0.202     .0216011     2.24606
       Other |   1.389374   2.023363     0.23   0.821      .080021    24.12317
   AsianMale |  (omitted)
   BlackMale |   1.723092   2.066115     0.45   0.650     .1643063    18.07018
  LatinoMale |   2.367131   3.457919     0.59   0.555     .1351395    41.46315
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  pyschooltype = E

Iteration 0:   log likelihood = -10521.777
Iteration 1:   log likelihood = -9932.6355
Iteration 2:   log likelihood = -9927.1161
Iteration 3:   log likelihood = -9927.1116
Iteration 4:   log likelihood = -9927.1116

Multinomial logistic regression                 Number of obs   =       9745
                                                LR chi2(38)     =    1189.33
                                                Prob > chi2     =     0.0000
Log likelihood = -9927.1116                     Pseudo R2       =     0.0565

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.010423   .0043361     2.42   0.016      1.00196    1.018957
       exper |   1.007163   .0055972     1.28   0.199     .9962521    1.018193
 acctrating2 |   .9096854   .0401574    -2.14   0.032     .8342871    .9918978
pyperstudlep |   1.009294   .0019578     4.77   0.000     1.005464    1.013138
pyperstude~s |   .9831259   .0022365    -7.48   0.000     .9787523     .987519
pyperstudw~e |   .9910625   .0056214    -1.58   0.113     .9801058    1.002142
pyperstudb~k |   .9934337   .0063514    -1.03   0.303     .9810629     1.00596
pyperstudl~o |   .9980076   .0060001    -0.33   0.740     .9863167    1.009837
pyperstudm~e |   1.013906   .0040996     3.42   0.001     1.005903    1.021973
        male |   1.599915   .1395654     5.39   0.000     1.348479    1.898234
         age |   .9777939   .0043412    -5.06   0.000     .9693222    .9863397
       Asian |   .8773283   .4164942    -0.28   0.783      .345996    2.224606
       Black |   1.357933   .1356265     3.06   0.002      1.11651    1.651558
      Latino |   1.073166   .0900031     0.84   0.400     .9104989    1.264895
       Other |   .9467153   .2805456    -0.18   0.853     .5296365    1.692236
   AsianMale |    2.23444   1.811479     0.99   0.321      .456134    10.94573
   BlackMale |   .8243359   .1692292    -0.94   0.347     .5512641    1.232675
```

```
  LatinoMale |   .8262679   .1267443    -1.24   0.213     .6117188    1.116066
   OtherMale |   1.339408   .8317443     0.47   0.638     .3965835    4.523673
-------------+----------------------------------------------------------------
3            |
      tenure |   1.019346   .0036423     5.36   0.000     1.012232     1.02651
       exper |   1.070123   .0055465    13.08   0.000     1.059307    1.081049
 acctrating2 |   1.029302   .0416212     0.71   0.475     .9508746    1.114198
pyperstudlep |   .9987876   .0018443    -0.66   0.511     .9951793    1.002409
pyperstude~s |   1.002754   .0020732     1.33   0.183     .9986985    1.006826
pyperstudw~e |   1.010859   .0059816     1.83   0.068     .9992031    1.022651
pyperstudb~k |    1.00142   .0065897     0.22   0.829     .9885871    1.014419
pyperstudl~o |   1.002676   .0062505     0.43   0.668     .9904998    1.015002
pyperstudm~e |   1.002198   .0039222     0.56   0.575     .9945399    1.009915
        male |   2.524627   .1925404    12.14   0.000     2.174105    2.931663
         age |   .9798189   .0043306    -4.61   0.000     .9713678    .9883436
       Asian |    1.10841   .5400499     0.21   0.833     .4265501    2.880254
       Black |   .9547196   .0961715    -0.46   0.646     .7836678    1.163107
      Latino |   1.204155   .0967454     2.31   0.021     1.028713    1.409517
       Other |   .5518079    .180828    -1.81   0.070     .2903008    1.048884
   AsianMale |   .4712751   .4432626    -0.80   0.424     .0745879    2.977698
   BlackMale |   .6111517   .1221218    -2.46   0.014     .4131044    .9041453
  LatinoMale |   .6006992   .0864704    -3.54   0.000       .45303    .7965024
   OtherMale |      .4594   .3682091    -0.97   0.332     .0954889    2.210187
------------------------------------------------------------------------------


---------->  pyschooltype = M

Iteration 0:   log likelihood = -5820.3664
Iteration 1:   log likelihood = -5525.2007
Iteration 2:   log likelihood = -5519.7526
Iteration 3:   log likelihood = -5519.6919
Iteration 4:   log likelihood = -5519.6917

Multinomial logistic regression                 Number of obs   =       5543
                                                LR chi2(38)     =     601.35
                                                Prob > chi2     =     0.0000
Log likelihood = -5519.6917                     Pseudo R2       =     0.0517

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.011756   .0050787     2.33   0.020     1.001851    1.021759
       exper |    1.00626   .0062651     1.00   0.316     .9940558    1.018615
 acctrating2 |   .8939641    .063276    -1.58   0.113     .7781636    1.026997
pyperstudlep |   1.009872   .0042123     2.36   0.019      1.00165    1.018162
pyperstude~s |    .992811   .0028007    -2.56   0.011     .9873369    .9983154
pyperstudw~e |   .9983295   .0079429    -0.21   0.834     .9828823    1.014019
pyperstudb~k |   1.002287   .0088665     0.26   0.796     .9850588    1.019816
pyperstudl~o |   .9992713    .008464    -0.09   0.931     .9828191    1.015999
pyperstudm~e |    1.01287   .0045854     2.82   0.005     1.003923    1.021898
        male |   1.477094   .1177311     4.89   0.000     1.263465    1.726842
         age |   .9649864   .0049729    -6.92   0.000     .9552888    .9747825
       Asian |   .6122836   .2994521    -1.00   0.316      .234775     1.59681
       Black |   1.001341   .1249533     0.01   0.991     .7840864    1.278792
      Latino |    1.72082   .2129804     4.39   0.000     1.350159    2.193239
       Other |   .4962216   .2329875    -1.49   0.136     .1977046    1.245474
   AsianMale |   1.514477   1.172721     0.54   0.592     .3320038    6.908478
   BlackMale |   1.690381   .3202441     2.77   0.006     1.166067    2.450448
  LatinoMale |   1.019051   .1693882     0.11   0.910     .7357119    1.411509
   OtherMale |   2.004569   1.217191     1.15   0.252     .6097676    6.589883
-------------+----------------------------------------------------------------
3            |
      tenure |   1.014986   .0051146     2.95   0.003     1.005011     1.02506
```

```
       exper |   1.065605   .0078657     8.61   0.000     1.050299    1.081133
 acctrating2 |   1.061707   .0831404     0.76   0.444     .9106443     1.23783
pyperstudlep |   1.007448   .0051443     1.45   0.146     .9974159    1.017581
pyperstude~s |    1.01164   .0032809     3.57   0.000      1.00523    1.018091
pyperstudw~e |   1.022441   .0104111     2.18   0.029     1.002238    1.043052
pyperstudb~k |   1.002616   .0113648     0.23   0.818     .9805871     1.02514
pyperstudl~o |   1.002632   .0108423     0.24   0.808     .9816048    1.024109
pyperstudm~e |   .9993107   .0059434    -0.12   0.908     .9877294    1.011028
        male |   1.797605   .1579726     6.67   0.000     1.513182     2.13549
         age |   .9641664   .0063865    -5.51   0.000     .9517301    .9767653
       Asian |   .5568112   .4239885    -0.77   0.442     .1251853    2.476637
       Black |   .9093768   .1474686    -0.59   0.558     .6617733    1.249622
      Latino |   1.495991   .2332701     2.58   0.010     1.102049    2.030753
       Other |   .1643124    .169257    -1.75   0.080       .02182    1.237333
   AsianMale |   1.591274   1.656553     0.45   0.655     .2068353    12.24236
   BlackMale |   1.988456    .450465     3.03   0.002     1.275512    3.099896
  LatinoMale |   .9979458    .198596    -0.01   0.992     .6756375    1.474009
   OtherMale |   6.133806   6.843554     1.63   0.104     .6887081     54.6292
-------------------------------------------------------------------------------


---------->  pyschooltype = S

Iteration 0:   log likelihood = -6588.2959
Iteration 1:   log likelihood = -6299.4774
Iteration 2:   log likelihood = -6288.9998
Iteration 3:   log likelihood = -6288.7516
Iteration 4:   log likelihood =  -6288.696
Iteration 5:   log likelihood = -6288.6829
Iteration 6:   log likelihood = -6288.6802
Iteration 7:   log likelihood = -6288.6797
Iteration 8:   log likelihood = -6288.6797
Iteration 9:   log likelihood = -6288.6796

Multinomial logistic regression                 Number of obs   =       6874
                                                LR chi2(38)     =     599.23
                                                Prob > chi2     =     0.0000
Log likelihood = -6288.6796                     Pseudo R2       =     0.0455

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.005137   .0039511     1.30   0.192     .9974226    1.012911
       exper |   1.009471   .0054023     1.76   0.078     .9989382    1.020115
 acctrating2 |   .9019339   .0607266    -1.53   0.125     .7904308    1.029166
pyperstudlep |   1.021862   .0048179     4.59   0.000     1.012463    1.031349
pyperstude~s |   .9857389   .0023914    -5.92   0.000      .981063     .990437
pyperstudw~e |   1.001344   .0068591     0.20   0.845     .9879902    1.014878
pyperstudb~k |   1.005403   .0075907     0.71   0.475     .9906355    1.020391
pyperstudl~o |   1.006571   .0073424     0.90   0.369     .9922827    1.021065
pyperstudm~e |   1.008792   .0036254     2.44   0.015     1.001712    1.015923
        male |   1.174807   .0810598     2.33   0.020     1.026207    1.344925
         age |   .9716824   .0046661    -5.98   0.000     .9625799     .980871
       Asian |   .5278113    .343947    -0.98   0.327     .1471618     1.89305
       Black |   1.292817   .1593124     2.08   0.037     1.015417       1.646
      Latino |   1.608428   .1957945     3.90   0.000     1.267023    2.041825
       Other |   .4498124   .2514519    -1.43   0.153     .1503823    1.345445
   AsianMale |   1.791263   1.538819     0.68   0.497     .3325968    9.647184
   BlackMale |   2.271665   .3849438     4.84   0.000     1.629688    3.166534
  LatinoMale |   1.226855   .1822291     1.38   0.169     .9169832    1.641441
   OtherMale |   3.281067   2.234184     1.74   0.081     .8637828    12.46309
-------------+----------------------------------------------------------------
3            |
      tenure |   .9942578    .004703    -1.22   0.223     .9850828    1.003518
```

```
       exper |   1.051019   .0076595     6.83   0.000     1.036113    1.066139
 acctrating2 |    1.19671   .1020427     2.11   0.035     1.012529    1.414394
pyperstudlep |   .9986123   .0072672    -0.19   0.849     .9844699    1.012958
pyperstude~s |   1.016116   .0031507     5.16   0.000      1.00996    1.022311
pyperstudw~e |   1.059456   .0137778     4.44   0.000     1.032793    1.086807
pyperstudb~k |    1.04702   .0145433     3.31   0.001       1.0189    1.075916
pyperstudl~o |   1.043969   .0141126     3.18   0.001     1.016672    1.071999
pyperstudm~e |    .995206   .0054172    -0.88   0.377      .984645     1.00588
        male |   1.877312   .1784969     6.62   0.000     1.558129    2.261881
         age |   .9784678    .006808    -3.13   0.002     .9652149    .9919026
       Asian |   .6505576   .6833723    -0.41   0.682     .0830135    5.098269
       Black |   .6540578   .1597647    -1.74   0.082     .4052246     1.05569
      Latino |   1.320739    .251778     1.46   0.144     .9089684    1.919045
       Other |   .8767661   .6642689    -0.17   0.862     .1986019    3.870651
   AsianMale |   1.42e-06   .0009555    -0.02   0.984            0           .
   BlackMale |   3.104652   .8897798     3.95   0.000     1.770363    5.444571
  LatinoMale |   .8187726   .1821659    -0.90   0.369     .5293981    1.266322
   OtherMale |   1.653576   1.522178     0.55   0.585     .2721832    10.04585
------------------------------------------------------------------------------
```

2004-05

```
. mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperst
> udmobile  Asian Black Latino Other AsianMale BlackMale LatinoMale OtherMale if
validcert2005a==1, rrr

Iteration 0:   log likelihood = -24700.874
Iteration 1:   log likelihood = -23590.164
Iteration 2:   log likelihood =  -23568.37
Iteration 3:   log likelihood = -23568.323
Iteration 4:   log likelihood = -23568.323

Multinomial logistic regression                 Number of obs   =      23258
                                                LR chi2(38)     =    2265.10
                                                Prob > chi2     =     0.0000
Log likelihood = -23568.323                     Pseudo R2       =     0.0459

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.010831   .0024966     4.36   0.000     1.005949    1.015736
       exper |   1.005706   .0031865     1.80   0.073     .9994802    1.011971
        male |   1.216823   .0504557     4.73   0.000     1.121843    1.319844
         age |   .9732073   .0025706   -10.28   0.000     .9681821    .9782586
pyacctrati~2 |    .950158   .0275134    -1.77   0.077     .8977345    1.005643
pyperstudlep |   1.007439   .0013255     5.63   0.000     1.004845    1.010041
pyperstude~s |   .9902531    .001225    -7.92   0.000     .9878551    .9926569
pyperstudw~e |   .9929874   .0035999    -1.94   0.052     .9859568    1.000068
pyperstudb~k |   .9977806   .0040202    -0.55   0.581     .9899322    1.005691
pyperstudl~o |   .9980885   .0038144    -0.50   0.617     .9906403    1.005593
pyperstudm~e |   1.004372   .0020674     2.12   0.034     1.000328    1.008433
       Asian |   .9734874   .2514702    -0.10   0.917     .5867443    1.615146
       Black |   1.149569   .0713464     2.25   0.025     1.017903    1.298266
      Latino |    1.34557   .0767681     5.20   0.000     1.203215    1.504768
       Other |   .7238426   .1509079    -1.55   0.121     .4810434    1.089191
   AsianMale |    1.45982   .6514127     0.85   0.397     .6087926    3.500494
   BlackMale |   1.523129   .1508264     4.25   0.000     1.254432     1.84938
  LatinoMale |   1.124048   .0927311     1.42   0.156     .9562315    1.321317
   OtherMale |   1.672711   .5195042     1.66   0.098     .9100345    3.074566
-------------+----------------------------------------------------------------
3            |
      tenure |   1.012496   .0023509     5.35   0.000     1.007899    1.017114
       exper |   1.057949   .0036201    16.46   0.000     1.050877    1.065068
```

```
        male |   1.398009   .0589981     7.94   0.000     1.287028     1.51856
         age |   .9785514   .0029736    -7.14   0.000     .9727407    .9843969
pyacctrati~2 |   1.378261   .0399695    11.06   0.000     1.302107    1.458869
pyperstudlep |    1.00993   .0014071     7.09   0.000     1.007175    1.012691
pyperstude~s |    1.01934   .0013528    14.43   0.000     1.016692    1.021995
pyperstudw~e |   1.010245   .0042334     2.43   0.015     1.001981    1.018576
pyperstudb~k |   .9963817   .0046443    -0.78   0.437     .9873204    1.005526
pyperstudl~o |    .991927   .0043816    -1.84   0.067     .9833763    1.000552
pyperstudm~e |   .9901957   .0024822    -3.93   0.000     .9853426    .9950727
       Asian |   .4883856   .1841987    -1.90   0.057     .2331981    1.022823
       Black |    .730958   .0541092    -4.23   0.000     .6322404    .8450893
      Latino |   1.167492   .0731911     2.47   0.014     1.032503    1.320129
       Other |   .5132891   .1318326    -2.60   0.009     .3102705    .8491484
   AsianMale |   1.390346   .8703409     0.53   0.599     .4076434    4.742043
   BlackMale |   1.623271   .1870942     4.20   0.000     1.295042    2.034691
  LatinoMale |   .9424294   .0860987    -0.65   0.516     .7879243    1.127231
   OtherMale |   1.841173   .6869488     1.64   0.102     .8861516    3.825438
------------------------------------------------------------------------------

. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=23258)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     35.234    2    0.000
       exper |    300.098    2    0.000
        male |     67.675    2    0.000
         age |    126.571    2    0.000
pyacctrati~2 |    158.767    2    0.000
pyperstudlep |     60.587    2    0.000
pyperstude~s |    401.086    2    0.000
pyperstudw~e |     15.028    2    0.001
pyperstudb~k |      0.695    2    0.706
pyperstudl~o |      3.345    2    0.188
pyperstudm~e |     29.141    2    0.000
       Asian |      4.369    2    0.113
       Black |     32.532    2    0.000
      Latino |     27.459    2    0.000
       Other |      8.297    2    0.016
   AsianMale |      0.805    2    0.669
   BlackMale |     26.156    2    0.000
  LatinoMale |      3.716    2    0.156
   OtherMale |      4.253    2    0.119
---------------------------------------

**** Wald tests for independent variables (N=23258)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     35.213    2    0.000
       exper |    282.305    2    0.000
        male |     67.538    2    0.000
         age |    124.615    2    0.000
pyacctrati~2 |    159.844    2    0.000
pyperstudlep |     60.024    2    0.000
pyperstude~s |    387.446    2    0.000
pyperstudw~e |     14.819    2    0.001
pyperstudb~k |      0.695    2    0.706
pyperstudl~o |      3.389    2    0.184
pyperstudm~e |     27.996    2    0.000
       Asian |      3.736    2    0.154
       Black |     31.795    2    0.000
```

```
      Latino |     27.499    2    0.000
       Other |      7.761    2    0.021
   AsianMale |      0.799    2    0.671
   BlackMale |     25.831    2    0.000
  LatinoMale |      3.717    2    0.156
   OtherMale |      4.211    2    0.122
-------------------------------------

**** Hausman tests of IIA assumption (N=23258)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+----------------------------------
       2 |   -83.182   20     ---    ---
       3 |    -5.550   19     ---    ---
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=23258)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+-----------------------------------------------------
       2 |  -4954.014  -4939.784  28.460   20    0.099   for Ho
       3 |  -5650.783  -5645.361  10.844   20    0.950   for Ho
-------------------------------------------------------------------

**** Wald tests for combining alternatives (N=23258)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+-------------------------
       2-       3  | 1494.467   19    0.000
       2-       1  |  458.601   19    0.000
       3-       1  | 1292.120   19    0.000
-----------------------------------------------

**** LR tests for combining alternatives (N=23258)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+-------------------------
       2-       3  | 1669.276   19    0.000
       2-       1  |  473.234   19    0.000
       3-       1  | 1428.344   19    0.000
-----------------------------------------------
by region:
. bysort region: mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian
Black Latino Other
> AsianMale BlackMale LatinoMale OtherMale if validcert2005a==1, rrr


---------->  region = 1

Iteration 0:   log likelihood = -1740.9362
Iteration 1:   log likelihood =  -1651.521
Iteration 2:   log likelihood = -1648.0365
Iteration 3:   log likelihood = -1647.7261
Iteration 4:   log likelihood = -1647.6834
```

```
Iteration 5:   log likelihood = -1647.6734
Iteration 6:   log likelihood =  -1647.671
Iteration 7:   log likelihood = -1647.6705
Iteration 8:   log likelihood = -1647.6704
Iteration 9:   log likelihood = -1647.6704
Iteration 10:  log likelihood = -1647.6704

Multinomial logistic regression                 Number of obs   =       1618
                                                LR chi2(38)     =     186.53
                                                Prob > chi2     =     0.0000
Log likelihood = -1647.6704                     Pseudo R2       =     0.0536

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.018743   .0090756     2.08   0.037     1.001109    1.036687
       exper |   .9921435   .0128197    -0.61   0.542     .9673328    1.017591
        male |   1.014762   .3045054     0.05   0.961     .5635587    1.827212
         age |   .9809635   .0108414    -1.74   0.082     .9599432    1.002444
pyacctrati~2 |   .7980171   .1005423    -1.79   0.073     .6234034     1.02154
pyperstudlep |    1.00611   .0031377     1.95   0.051     .9999788    1.012278
pyperstude~s |   .9936644   .0059601    -1.06   0.289     .9820512    1.005415
pyperstudw~e |   .9748414   .0749057    -0.33   0.740     .8385493    1.133285
pyperstudb~k |   .8695447   .1313314    -0.93   0.355     .6467418    1.169103
pyperstudl~o |   .9805592   .0656355    -0.29   0.769     .8599973    1.118022
pyperstudm~e |   .9930867   .0083293    -0.83   0.408      .976895    1.009547
       Asian |   8.09e-08   .0001889    -0.01   0.994            0           .
       Black |   .9151426   6927.706    -0.00   1.000            0           .
      Latino |   .9080522   .1922225    -0.46   0.649     .5996845    1.374987
       Other |   .8125912   .7625241    -0.22   0.825     .1291566    5.112433
   AsianMale |   1.31e+07   3.05e+10     0.01   0.994            0           .
   BlackMale |   .4267678   3230.668    -0.00   1.000            0           .
  LatinoMale |   1.302929   .4284102     0.80   0.421     .6839763    2.481993
   OtherMale |   1.421947   10764.26     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.030004   .0095945     3.17   0.002      1.01137    1.048981
       exper |   1.086692   .0186479     4.84   0.000     1.050751    1.123863
        male |   .7061247   .2489045    -0.99   0.324     .3538655    1.409044
         age |   .9451947   .0148113    -3.60   0.000     .9166063    .9746748
pyacctrati~2 |   1.419569   .1962437     2.53   0.011     1.082642     1.86135
pyperstudlep |   1.017609   .0036018     4.93   0.000     1.010574    1.024693
pyperstude~s |   .9967084   .0074553    -0.44   0.659     .9822028    1.011428
pyperstudw~e |   1.298923     .14096     2.41   0.016     1.050052     1.60678
pyperstudb~k |   1.280714    .137904     2.30   0.022     1.037044    1.581639
pyperstudl~o |    1.26914   .1239915     2.44   0.015     1.047971    1.536985
pyperstudm~e |   1.000019   .0089443     0.00   0.998     .9826416    1.017704
       Asian |   1.73e-07   .0004562    -0.01   0.995            0           .
       Black |   8.11e+07   4.18e+11     0.00   0.997            0           .
      Latino |   .6511751   .1512268    -1.85   0.065     .4130641    1.026545
       Other |    .453868   .5482424    -0.65   0.513     .0425338    4.843112
   AsianMale |   8.802396    29599.5     0.00   0.999            0           .
   BlackMale |   3.28e-15   1.74e-11    -0.01   0.995            0           .
  LatinoMale |   1.930963   .7461186     1.70   0.089     .9054659      4.1179
   OtherMale |   3.64e+08   1.88e+12     0.00   0.997            0           .
------------------------------------------------------------------------------


---------->  region = 2

Iteration 0:   log likelihood = -739.56901
Iteration 1:   log likelihood = -689.40693
Iteration 2:   log likelihood = -686.98457
Iteration 3:   log likelihood = -686.68311
```

```
Iteration 4:   log likelihood = -686.63527
Iteration 5:   log likelihood = -686.62404
Iteration 6:   log likelihood = -686.62152
Iteration 7:   log likelihood = -686.62097
Iteration 8:   log likelihood = -686.62088
Iteration 9:   log likelihood = -686.62087

Multinomial logistic regression                 Number of obs   =        733
                                                LR chi2(38)     =     105.90
                                                Prob > chi2     =     0.0000
Log likelihood = -686.62087                     Pseudo R2       =     0.0716

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.019079   .0170375     1.13   0.258     .9862278    1.053025
       exper |   .9871295   .0202842    -0.63   0.528     .9481631    1.027697
        male |   1.959811   .5926096     2.23   0.026     1.083495    3.544879
         age |   .9581159   .0160076    -2.56   0.010     .9272497    .9900096
pyacctrati~2 |    .818762   .1707869    -0.96   0.338     .5440067    1.232285
pyperstudlep |   .9721552   .0160673    -1.71   0.088     .9411685    1.004162
pyperstude~s |   1.008668   .0075858     1.15   0.251     .9939088    1.023646
pyperstudw~e |   .9830388   .0835931    -0.20   0.841     .8321247    1.161323
pyperstudb~k |   .9565206   .0919032    -0.46   0.644     .7923376    1.154725
pyperstudl~o |   .9766327    .079835    -0.29   0.772     .8320503    1.146339
pyperstudm~e |   1.014254   .0134169     1.07   0.285      .988295    1.040894
       Asian |   6.14e-07   .0021065    -0.00   0.997            0           .
       Black |   3.067711   2.195923     1.57   0.117     .7542392    12.47728
      Latino |   1.624398   .4533992     1.74   0.082     .9399538    2.807232
       Other |   .7781309   .9005738    -0.22   0.828     .0805212    7.519606
   AsianMale |   .3493147   1465.659    -0.00   1.000            0           .
   BlackMale |   .7510074   .9487518    -0.23   0.821     .0631418    8.932475
  LatinoMale |   .6001239   .2479128    -1.24   0.216     .2670591    1.348573
   OtherMale |   1.387762   2.330372     0.20   0.845     .0516358    37.29742
-------------+----------------------------------------------------------------
3            |
      tenure |   .9885095   .0125243    -0.91   0.362     .9642645    1.013364
       exper |   1.052887   .0183182     2.96   0.003     1.017589    1.089409
        male |   .8698132   .2509291    -0.48   0.629     .4941583    1.531038
         age |   .9923394   .0157334    -0.49   0.628     .9619766     1.02366
pyacctrati~2 |   1.531138   .2685839     2.43   0.015     1.085679    2.159373
pyperstudlep |   .9984496    .013968    -0.11   0.912     .9714449    1.026205
pyperstude~s |   1.023282   .0077358     3.04   0.002     1.008232    1.038556
pyperstudw~e |   1.147627   .0976863     1.62   0.106     .9712843    1.355986
pyperstudb~k |   1.163231   .1101139     1.60   0.110     .9662497    1.400369
pyperstudl~o |   1.126236   .0924915     1.45   0.148     .9587931    1.322921
pyperstudm~e |   .9618233   .0156052    -2.40   0.016     .9317189    .9929004
       Asian |   8.10e-07   .0025336    -0.00   0.996            0           .
       Black |   1.598759   1.152062     0.65   0.515     .3894118    6.563825
      Latino |   .8192096   .2060629    -0.79   0.428     .5003627    1.341236
       Other |   4.63e-07   .0005619    -0.01   0.990            0           .
   AsianMale |   .4719602   1798.912    -0.00   1.000            0           .
   BlackMale |   .7415433   1.083083    -0.20   0.838     .0423535    12.98326
  LatinoMale |   1.704239   .6794575     1.34   0.181     .7801312    3.723002
   OtherMale |   1.269266   2313.323     0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -327.52666
```

```
Iteration 1:   log likelihood = -295.45406
Iteration 2:   log likelihood = -294.30385
Iteration 3:   log likelihood = -294.16588
Iteration 4:   log likelihood = -294.14393
Iteration 5:   log likelihood = -294.13876
Iteration 6:   log likelihood = -294.13755
Iteration 7:   log likelihood = -294.13729
Iteration 8:   log likelihood = -294.13723
Iteration 9:   log likelihood = -294.13722

Multinomial logistic regression                 Number of obs   =        304
                                                LR chi2(32)     =      66.78
                                                Prob > chi2     =     0.0003
Log likelihood = -294.13722                     Pseudo R2       =     0.1019

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.018446   .0253576     0.73   0.463     .9699387    1.069378
       exper |   .9413629   .0280851    -2.03   0.043     .8878957    .9980499
        male |   2.236938   .8391839     2.15   0.032     1.072326    4.666389
         age |   .9972038   .0255369    -0.11   0.913     .9483878    1.048532
pyacctrati~2 |   1.199612   .3347289     0.65   0.514      .694271    2.072776
pyperstudlep |   1.051317   .0427725     1.23   0.219     .9707395    1.138582
pyperstude~s |   .9825551   .0177925    -0.97   0.331      .948294    1.018054
pyperstudw~e |   1.022325   .0613078     0.37   0.713     .9089572    1.149833
pyperstudb~k |   1.043364   .0638404     0.69   0.488     .9254503      1.1763
pyperstudl~o |    1.04802    .065693     0.75   0.454     .9268596     1.18502
pyperstudm~e |   1.015195   .0237518     0.64   0.519     .9696939    1.062832
       Asian |  (omitted)
       Black |   1.305006   1.003731     0.35   0.729     .2890147    5.892574
      Latino |   2.835797   1.591789     1.86   0.063     .9437978    8.520622
       Other |   1.354299   3003.564     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |    1256814   7.85e+08     0.02   0.982            0           .
  LatinoMale |   2.994443   3.703972     0.89   0.375     .2651084    33.82273
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.011385   .0205954     0.56   0.578     .9718133    1.052567
       exper |    1.01676   .0292505     0.58   0.563     .9610167    1.075737
        male |   1.504423   .5020508     1.22   0.221     .7821858    2.893543
         age |   .9868924    .026035    -0.50   0.617     .9371615    1.039262
pyacctrati~2 |   .9304735    .223348    -0.30   0.764     .5812784    1.489443
pyperstudlep |   1.050034   .0374038     1.37   0.171     .9792244    1.125964
pyperstude~s |    1.03919   .0175723     2.27   0.023     1.005313    1.074208
pyperstudw~e |   1.125979   .0681328     1.96   0.050     1.000056    1.267758
pyperstudb~k |   1.091869   .0672442     1.43   0.154     .9677169     1.23195
pyperstudl~o |   1.103158   .0694103     1.56   0.119       .97517    1.247944
pyperstudm~e |   .9993824   .0242307    -0.03   0.980     .9530019     1.04802
       Asian |  (omitted)
       Black |   1.437933   .9040657     0.58   0.563     .4193402    4.930728
      Latino |   .8348121   .5318273    -0.28   0.777     .2395081     2.90976
       Other |    5580878   7.59e+09     0.01   0.991            0           .
   AsianMale |  (omitted)
   BlackMale |   427260.2   2.67e+08     0.02   0.983            0           .
  LatinoMale |    10.4392   13.34962     1.83   0.067     .8514384    127.9916
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 4

Iteration 0:   log likelihood = -5171.5823
```

```
Iteration 1:   log likelihood = -4870.9237
Iteration 2:   log likelihood = -4856.9663
Iteration 3:   log likelihood = -4856.8189
Iteration 4:   log likelihood = -4856.7876
Iteration 5:   log likelihood = -4856.7801
Iteration 6:   log likelihood = -4856.7786
Iteration 7:   log likelihood = -4856.7782
Iteration 8:   log likelihood = -4856.7782
Iteration 9:   log likelihood = -4856.7781

Multinomial logistic regression                 Number of obs   =       5071
                                                LR chi2(38)     =     629.61
                                                Prob > chi2     =     0.0000
Log likelihood = -4856.7781                     Pseudo R2       =     0.0609

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.019611   .0054352     3.64   0.000     1.009014     1.03032
       exper |   1.034187   .0074577     4.66   0.000     1.019673    1.048908
        male |   1.093746   .0990581     0.99   0.322     .9158518    1.306195
         age |   .9553555    .005662    -7.71   0.000     .9443224    .9665176
pyacctrati~2 |   .9897144   .0583527    -0.18   0.861      .881706    1.110954
pyperstudlep |   .9969527    .003059    -0.99   0.320     .9909751    1.002966
pyperstude~s |   .9927365   .0031718    -2.28   0.023     .9865393    .9989726
pyperstudw~e |   .9980092   .0055701    -0.36   0.721     .9871515    1.008986
pyperstudb~k |   1.000495    .006776     0.07   0.942     .9873025    1.013865
pyperstudl~o |   1.005964   .0065529     0.91   0.361     .9932026     1.01889
pyperstudm~e |   1.004615   .0050486     0.92   0.360     .9947686    1.014559
       Asian |   1.381154   .5050165     0.88   0.377     .6745309     2.82802
       Black |   .8297887   .0874288    -1.77   0.077     .6749671    1.020123
      Latino |   1.395253   .1846826     2.52   0.012     1.076424    1.808515
       Other |   .7134327   .2719081    -0.89   0.376     .3380163    1.505804
   AsianMale |   1.281598   1.156255     0.28   0.783     .2186749    7.511114
   BlackMale |   1.864548   .3095931     3.75   0.000       1.3466    2.581718
  LatinoMale |    1.11509   .2409697     0.50   0.614      .730073    1.703153
   OtherMale |   .4866417   .4245082    -0.83   0.409     .0880415    2.689868
-------------+----------------------------------------------------------------
3            |
      tenure |   1.036425    .006075     6.10   0.000     1.024587    1.048401
       exper |   1.073041   .0095303     7.94   0.000     1.054524    1.091884
        male |   1.084459   .1183287     0.74   0.457     .8756605    1.343044
         age |   .9726128   .0073868    -3.66   0.000     .9582421     .987199
pyacctrati~2 |   1.275487   .0879521     3.53   0.000     1.114245    1.460062
pyperstudlep |   1.018286   .0037732     4.89   0.000     1.010918    1.025709
pyperstude~s |   1.018091   .0042658     4.28   0.000     1.009764    1.026486
pyperstudw~e |   1.017843   .0072984     2.47   0.014     1.003638    1.032248
pyperstudb~k |    1.00666   .0089164     0.75   0.454     .9893353    1.024289
pyperstudl~o |   .9925193   .0083568    -0.89   0.372     .9762746    1.009034
pyperstudm~e |   .9889396   .0073257    -1.50   0.133     .9746853    1.003402
       Asian |   .4375726   .2900477    -1.25   0.212      .119351    1.604259
       Black |   .4434752   .0625806    -5.76   0.000     .3363201    .5847711
      Latino |   1.195376   .1910571     1.12   0.264       .87389     1.63513
       Other |   .4962456   .2750353    -1.26   0.206     .1674686    1.470483
   AsianMale |   5.64e-06   .0031367    -0.02   0.983            0           .
   BlackMale |   2.283385   .4923461     3.83   0.000      1.49638    3.484305
  LatinoMale |   1.388663   .3748778     1.22   0.224     .8181069    2.357131
   OtherMale |   3.257914   2.874614     1.34   0.181     .5779415    18.36519
------------------------------------------------------------------------------


---------->  region = 5

note: OtherMale omitted because of collinearity
```

```
Iteration 0:   log likelihood = -525.36986
Iteration 1:   log likelihood =  -484.1022
Iteration 2:   log likelihood = -483.03544
Iteration 3:   log likelihood = -482.85527
Iteration 4:   log likelihood = -482.82106
Iteration 5:   log likelihood = -482.81298
Iteration 6:   log likelihood = -482.81157
Iteration 7:   log likelihood = -482.81124
Iteration 8:   log likelihood = -482.81116
Iteration 9:   log likelihood = -482.81115

Multinomial logistic regression                 Number of obs   =        506
                                                LR chi2(36)     =      85.12
                                                Prob > chi2     =     0.0000
Log likelihood = -482.81115                     Pseudo R2       =     0.0810

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.000341   .0165994     0.02   0.984       .96833     1.03341
       exper |   1.025645   .0259305     1.00   0.317     .9760609    1.077748
        male |   3.145236   .9113412     3.95   0.000     1.782441    5.549979
         age |   .9540187   .0210867    -2.13   0.033     .9135719    .9962561
pyacctrati~2 |   1.187139   .2541964     0.80   0.423     .7802575    1.806198
pyperstudlep |   .9692014   .0358298    -0.85   0.397      .90146     1.042033
pyperstude~s |   1.007659   .0101369     0.76   0.448     .9879853    1.027724
pyperstudw~e |   .9891163   .0475887    -0.23   0.820     .9001068    1.086928
pyperstudb~k |   .9881279   .0494967    -0.24   0.812     .8957261    1.090062
pyperstudl~o |   1.000148   .0612829     0.00   0.998     .8869677     1.12777
pyperstudm~e |   .9832091    .029008    -0.57   0.566      .927967     1.04174
       Asian |   6.14e-07   .0010112    -0.01   0.993            0           .
       Black |   1.999076   .8105741     1.71   0.088      .903002    4.425575
      Latino |   1.792641   2.263234     0.46   0.644     .1509522    21.28861
       Other |   1.03e-06   .0016918    -0.01   0.993            0           .
   AsianMale |    1525358   2.51e+09     0.01   0.993            0           .
   BlackMale |   .9517595   .5334473    -0.09   0.930     .3172789    2.855047
  LatinoMale |   2.414934   4.144087     0.51   0.607     .0836031    69.75708
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9996267   .0147393    -0.03   0.980     .9711516    1.028937
       exper |   1.058466   .0259342     2.32   0.020     1.008837    1.110537
        male |   2.223987   .6164423     2.88   0.004     1.291805    3.828841
         age |   .9799299   .0213183    -0.93   0.351      .939025    1.022617
pyacctrati~2 |    1.26405   .2503962     1.18   0.237     .8573323    1.863713
pyperstudlep |   .9958532   .0352655    -0.12   0.907     .9290781    1.067428
pyperstude~s |   1.033896   .0102023     3.38   0.001     1.014092    1.054087
pyperstudw~e |   .9781701   .0428744    -0.50   0.615     .8976461    1.065917
pyperstudb~k |   .9526947   .0436166    -1.06   0.290      .870931    1.042135
pyperstudl~o |   .9524329   .0550362    -0.84   0.399      .850448    1.066648
pyperstudm~e |   .9674013   .0289016    -1.11   0.267     .9123818    1.025739
       Asian |   5.77e-07   .0009341    -0.01   0.993            0           .
       Black |   2.205418   .9388428     1.86   0.063     .9574934    5.079793
      Latino |   2.508912   3.315736     0.70   0.486     .1881706    33.45176
       Other |   2.77e-06   .0044826    -0.01   0.994            0           .
   AsianMale |   3.073815   5867.783     0.00   1.000            0           .
   BlackMale |   1.568208   .9240536     0.76   0.445     .4941287    4.976994
  LatinoMale |   8.78e-07   .0008494    -0.01   0.989            0           .
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 6
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -851.34288
Iteration 1:   log likelihood = -801.53306
Iteration 2:   log likelihood = -799.99281
Iteration 3:   log likelihood = -799.86746
Iteration 4:   log likelihood = -799.84816
Iteration 5:   log likelihood = -799.84353
Iteration 6:   log likelihood = -799.84255
Iteration 7:   log likelihood = -799.84234
Iteration 8:   log likelihood =  -799.8423
Iteration 9:   log likelihood = -799.84229

Multinomial logistic regression                 Number of obs   =        797
                                                LR chi2(36)     =     103.00
                                                Prob > chi2     =     0.0000
Log likelihood = -799.84229                     Pseudo R2       =     0.0605

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9994508   .0133506    -0.04   0.967     .9736237    1.025963
       exper |   1.020409   .0168367     1.22   0.221     .9879378    1.053948
        male |    1.42729   .2793252     1.82   0.069     .9725889    2.094571
         age |   .9703984   .0136767    -2.13   0.033     .9439595    .9975779
pyacctrati~2 |   1.051362    .149899     0.35   0.725     .7950444    1.390315
pyperstudlep |   1.040345   .0175742     2.34   0.019     1.006464    1.075366
pyperstude~s |     .98448   .0071709    -2.15   0.032     .9705251    .9986355
pyperstudw~e |   1.035225   .0329073     1.09   0.276      .972696    1.101774
pyperstudb~k |   1.049126   .0360617     1.40   0.163     .9807749    1.122241
pyperstudl~o |   1.030302   .0335471     0.92   0.359     .9666047    1.098196
pyperstudm~e |   1.002858   .0131832     0.22   0.828     .9773496    1.029033
       Asian |   5.14e-07   .0009937    -0.01   0.994            0           .
       Black |   .7191077   .3674511    -0.65   0.519     .2641467    1.957684
      Latino |   2.652117   1.622929     1.59   0.111     .7993019    8.799834
       Other |   1.06e-06   .0020481    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   3.268831   2.512418     1.54   0.123     .7247034    14.74432
  LatinoMale |   .3972035   .3467658    -1.06   0.290     .0717627    2.198505
   OtherMale |   1.00e+12   2.19e+15     0.01   0.990            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9830818   .0128325    -1.31   0.191     .9582495    1.008558
       exper |   1.100904   .0217057     4.88   0.000     1.059173    1.144279
        male |   2.215185   .4588301     3.84   0.000      1.47605    3.324443
         age |   .9396294   .0165058    -3.54   0.000     .9078291    .9725436
pyacctrati~2 |   1.362885   .2101248     2.01   0.045     1.007451    1.843718
pyperstudlep |    1.04848   .0187404     2.65   0.008     1.012385    1.085861
pyperstude~s |   1.014535   .0077382     1.89   0.059      .999481    1.029815
pyperstudw~e |   1.039645   .0335944     1.20   0.229     .9758432    1.107619
pyperstudb~k |   1.055275   .0358183     1.59   0.113     .9873565    1.127865
pyperstudl~o |   1.012159   .0333554     0.37   0.714     .9488499    1.079692
pyperstudm~e |   .9932932   .0158502    -0.42   0.673     .9627082     1.02485
       Asian |   5.63e-07   .0011566    -0.01   0.994            0           .
       Black |   1.328636   .6117796     0.62   0.537     .5388459    3.276028
      Latino |   1.780469   1.303158     0.79   0.431      .424155    7.473848
       Other |   8.41e-07   .0017272    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   .3911314   .3529425    -1.04   0.298      .066716    2.293061
  LatinoMale |   .3286956   .3662337    -1.00   0.318     .0370154    2.918807
   OtherMale |   7.58e+11   1.73e+15     0.01   0.990            0           .
------------------------------------------------------------------------------


--------->  region = 7
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1021.2652
Iteration 1:   log likelihood = -955.80807
Iteration 2:   log likelihood = -953.28472
Iteration 3:   log likelihood = -953.12739
Iteration 4:   log likelihood = -953.09222
Iteration 5:   log likelihood = -953.08505
Iteration 6:   log likelihood = -953.08374
Iteration 7:   log likelihood = -953.08361
Iteration 8:   log likelihood = -953.08358

Multinomial logistic regression                 Number of obs   =       1000
                                                LR chi2(36)     =     136.36
                                                Prob > chi2     =     0.0000
Log likelihood = -953.08358                     Pseudo R2       =     0.0668

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9892562   .0131529    -0.81   0.417     .9638099    1.015374
       exper |   .9985379    .016265    -0.09   0.928     .9671625    1.030931
        male |   1.146507   .2298061     0.68   0.495     .7740366    1.698211
         age |   .9776539   .0140848    -1.57   0.117     .9504342    1.005653
pyacctrati~2 |   .7975222   .1361673    -1.33   0.185     .5707033    1.114487
pyperstudlep |   .9794685   .0169242    -1.20   0.230     .9468531    1.013207
pyperstude~s |    .988587   .0083133    -1.36   0.172     .9724267    1.005016
pyperstudw~e |   .9136147   .0706515    -1.17   0.243     .7851238    1.063134
pyperstudb~k |   .9171003   .0724791    -1.09   0.274     .7854992     1.07075
pyperstudl~o |   .9448821   .0749256    -0.71   0.475     .8088734     1.10376
pyperstudm~e |   .9965623    .014071    -0.24   0.807     .9693618    1.024526
       Asian |   1.03e-06   .0015119    -0.01   0.993            0           .
       Black |    1.85349   .6529128     1.75   0.080      .929276    3.696882
      Latino |   1.461084   1.838222     0.30   0.763     .1240965    17.20247
       Other |   3.06e-06   .0021181    -0.02   0.985            0           .
   AsianMale |  (omitted)
   BlackMale |   2.276683   1.185015     1.58   0.114     .8208266    6.314712
  LatinoMale |   .9538294   1.499489    -0.03   0.976     .0437845    20.77883
   OtherMale |   .4873077    611.149    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9926311   .0101433    -0.72   0.469     .9729484    1.012712
       exper |   1.024113   .0138141     1.77   0.077     .9973928    1.051549
        male |     2.0562   .3496534     4.24   0.000     1.473398     2.86953
         age |   1.000429   .0122864     0.03   0.972     .9766352    1.024802
pyacctrati~2 |   1.476805   .1920861     3.00   0.003     1.144481    1.905626
pyperstudlep |   1.019551   .0158706     1.24   0.214     .9889147    1.051136
pyperstude~s |   1.031946   .0071884     4.51   0.000     1.017953    1.046132
pyperstudw~e |   .9325297   .0732466    -0.89   0.374     .7994734    1.087731
pyperstudb~k |   .9235646    .073719    -1.00   0.319      .789813    1.079966
pyperstudl~o |   .9067262   .0730054    -1.22   0.224     .7743572    1.061722
pyperstudm~e |    .993877   .0121297    -0.50   0.615     .9703853    1.017937
       Asian |   2.49e-06   .0028485    -0.01   0.991            0           .
       Black |   1.179331   .3994256     0.49   0.626     .6072164    2.290486
      Latino |   1.419272   1.779489     0.28   0.780     .1215698    16.56935
       Other |   1.499719   1.877008     0.32   0.746     .1290236    17.43214
   AsianMale |  (omitted)
   BlackMale |   1.328555   .6963411     0.54   0.588     .4755929    3.711277
  LatinoMale |   .9991212    1.51389    -0.00   1.000     .0512695     19.4705
   OtherMale |   5.45e-07   .0004203    -0.02   0.985            0           .
------------------------------------------------------------------------------


--------->  region = 8
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -388.60186
Iteration 1:   log likelihood = -342.26164
Iteration 2:   log likelihood = -339.77205
Iteration 3:   log likelihood = -339.48278
Iteration 4:   log likelihood = -339.42315
Iteration 5:   log likelihood = -339.41004
Iteration 6:   log likelihood = -339.40793
Iteration 7:   log likelihood = -339.40741
Iteration 8:   log likelihood =  -339.4073
Iteration 9:   log likelihood = -339.40728

Multinomial logistic regression                 Number of obs   =        383
                                                LR chi2(36)     =      98.39
                                                Prob > chi2     =     0.0000
Log likelihood = -339.40728                     Pseudo R2       =     0.1266

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.045983   .0272559     1.73   0.084     .9939033    1.100791
       exper |   .9468449   .0274791    -1.88   0.060     .8944901    1.002264
        male |   3.606557   1.290329     3.59   0.000     1.788775    7.271598
         age |   1.000861   .0248388     0.03   0.972     .9533427    1.050747
pyacctrati~2 |   .8779597   .2660082    -0.43   0.668     .4848124    1.589921
pyperstudlep |   .9908096    .043837    -0.21   0.835     .9085106    1.080564
pyperstude~s |    .991355   .0142228    -0.61   0.545      .963867    1.019627
pyperstudw~e |   .7705202   .1258832    -1.60   0.111     .5593962    1.061325
pyperstudb~k |   .7913397    .130077    -1.42   0.155     .5733847    1.092144
pyperstudl~o |    .779993   .1292834    -1.50   0.134     .5636435    1.079386
pyperstudm~e |   1.036675   .0294172     1.27   0.204     .9805924    1.095965
       Asian |   .7950754   2576.054    -0.00   1.000            0           .
       Black |   3.372839   2.005728     2.04   0.041     1.051504    10.81882
      Latino |    4978002   3.14e+09     0.02   0.981            0           .
       Other |   3.23e-06   .0030447    -0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |   .1180971   .1575281    -1.60   0.109     .0086464     1.61304
  LatinoMale |   3.29e-13   4.43e-10    -0.02   0.983            0           .
   OtherMale |   3.01e+11   4.18e+14     0.02   0.985            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.024942   .0188399     1.34   0.180      .988674    1.062541
       exper |   1.009513   .0240357     0.40   0.691     .9634862    1.057739
        male |   2.735236   .7653934     3.60   0.000      1.58054    4.733519
         age |   1.008886   .0227343     0.39   0.695     .9652976    1.054443
pyacctrati~2 |   1.786105   .3858275     2.69   0.007      1.16959    2.727597
pyperstudlep |   .9959008   .0335302    -0.12   0.903     .9323043    1.063835
pyperstude~s |   1.036097   .0116577     3.15   0.002     1.013498    1.059199
pyperstudw~e |   .8648207   .1170651    -1.07   0.283     .6632916    1.127581
pyperstudb~k |   .8466045    .114574    -1.23   0.219     .6493584    1.103765
pyperstudl~o |    .845365   .1153015    -1.23   0.218     .6470632    1.104439
pyperstudm~e |     1.0017   .0287964     0.06   0.953     .9468202     1.05976
       Asian |   971660.2   1.59e+09     0.01   0.993            0           .
       Black |   2.289917   1.292402     1.47   0.142     .7575505    6.921942
      Latino |    2695289   1.70e+09     0.02   0.981            0           .
       Other |   1.620454   2.045654     0.38   0.702     .1364845    19.23934
   AsianMale |  (omitted)
   BlackMale |   1.098633   1.032684     0.10   0.920     .1740795    6.933582
  LatinoMale |   8.66e-07   .0005464    -0.02   0.982            0           .
   OtherMale |   694055.1   7.06e+08     0.01   0.989            0           .
------------------------------------------------------------------------------
```

```
---------->  region = 9

note: AsianMale omitted because of collinearity
note: LatinoMale omitted because of collinearity
Iteration 0:   log likelihood =  -218.4905
Iteration 1:   log likelihood = -186.21918
Iteration 2:   log likelihood = -183.62632
Iteration 3:   log likelihood = -183.36082
Iteration 4:   log likelihood = -183.30656
Iteration 5:   log likelihood = -183.29401
Iteration 6:   log likelihood =  -183.2919
Iteration 7:   log likelihood = -183.29167
Iteration 8:   log likelihood = -183.29162
Iteration 9:   log likelihood = -183.29161

Multinomial logistic regression                 Number of obs   =        208
                                                LR chi2(34)     =      70.40
                                                Prob > chi2     =     0.0002
Log likelihood = -183.29161                     Pseudo R2       =     0.1611

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |   1.011161   .0267753     0.42   0.675      .960021    1.065025
       exper |   .9700141   .0344308    -0.86   0.391     .9048249      1.0399
        male |   .4539432   .1761025    -2.04   0.042     .2122202    .9709934
         age |    1.00943   .0300287     0.32   0.752     .9522582    1.070035
pyacctrati~2 |   .8026273   .2488986    -0.71   0.478     .4370712    1.473926
pyperstudlep |   .9299732   .0661135    -1.02   0.307     .8090156    1.069015
pyperstude~s |   .9849503   .0160559    -0.93   0.352     .9539787    1.016927
pyperstudw~e |   .8454726   .0977179    -1.45   0.146     .6740925    1.060424
pyperstudb~k |    .841375   .1055848    -1.38   0.169     .6579179    1.075988
pyperstudl~o |   .8424559   .1026622    -1.41   0.159     .6634669    1.069732
pyperstudm~e |   1.003539   .0294186     0.12   0.904     .9475051    1.062887
       Asian |   1.431653   25742.27     0.00   1.000            0           .
       Black |   1.83e-07   .0002043    -0.01   0.989            0           .
      Latino |   3.78e-07   .0008258    -0.01   0.995            0           .
       Other |   1.07e+07   4.09e+10     0.00   0.997            0           .
   AsianMale |  (omitted)
   BlackMale |   2.75e+13   4.27e+16     0.02   0.984            0           .
  LatinoMale |  (omitted)
   OtherMale |   2.35e-14   9.56e-11    -0.01   0.994            0           .
-------------+----------------------------------------------------------------
2            |
      tenure |   .9784016   .0349415    -0.61   0.541     .9122593    1.049339
       exper |    .970925    .044411    -0.65   0.519     .8876687     1.06199
        male |   .3425812   .1636831    -2.24   0.025     .1342966    .8739007
         age |   .9723392   .0350001    -0.78   0.436     .9061042    1.043416
pyacctrati~2 |   .6006635   .2308414    -1.33   0.185      .282817    1.275725
pyperstudlep |    .974548   .0444424    -0.57   0.572      .891222    1.065665
pyperstude~s |   .9447616   .0220715    -2.43   0.015     .9024777    .9890265
pyperstudw~e |   .6488791   .0890553    -3.15   0.002     .4958391    .8491547
pyperstudb~k |   .6703349   .0968513    -2.77   0.006     .5050199    .8897646
pyperstudl~o |    .694687   .1009869    -2.51   0.012      .522456     .923695
pyperstudm~e |   1.007815   .0332225     0.24   0.813     .9447586    1.075079
       Asian |   8.39e+08   1.00e+13     0.00   0.999            0           .
       Black |   .2268488   .2832476    -1.19   0.235     .0196296    2.621576
      Latino |   4.58e-07   .0013659    -0.00   0.996            0           .
       Other |   .5085838   3476.326    -0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   1.97e+07   2.12e+10     0.02   0.988            0           .
  LatinoMale |  (omitted)
   OtherMale |   1.274893   8714.287     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |  (base outcome)
------------------------------------------------------------------------------
```

```
---------->  region = 10

Iteration 0:   log likelihood = -3632.1295
Iteration 1:   log likelihood = -3423.5344
Iteration 2:   log likelihood = -3419.3076
Iteration 3:   log likelihood = -3419.2919
Iteration 4:   log likelihood = -3419.2919

Multinomial logistic regression                 Number of obs   =       3392
                                                LR chi2(38)     =     425.68
                                                Prob > chi2     =     0.0000
Log likelihood = -3419.2919                     Pseudo R2       =     0.0586

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.016393   .0065811     2.51   0.012     1.003575    1.029374
       exper |   1.012516   .0085008     1.48   0.138     .9959907    1.029315
        male |   1.122336   .1199543     1.08   0.280     .9102219     1.38388
         age |   .9688996   .0066745    -4.59   0.000     .9559056    .9820701
pyacctrati~2 |   .9526564   .0702495    -0.66   0.511     .8244573     1.10079
pyperstudlep |   1.005602   .0048686     1.15   0.249     .9961049     1.01519
pyperstude~s |   .9833023   .0034198    -4.84   0.000     .9766224    .9900278
pyperstudw~e |   .9938219   .0083073    -0.74   0.458     .9776725    1.010238
pyperstudb~k |   .9984573   .0088827    -0.17   0.862     .9811985     1.01602
pyperstudl~o |   1.002868    .008661     0.33   0.740     .9860358    1.019988
pyperstudm~e |   1.009126   .0056967     1.61   0.108     .9980218    1.020353
       Asian |   1.493947   .9208099     0.65   0.515      .446363     5.00014
       Black |   1.446295   .1989048     2.68   0.007     1.104571    1.893739
      Latino |   2.429792   .4592797     4.70   0.000     1.677548    3.519358
       Other |   .5568759   .2663689    -1.22   0.221     .2180748    1.422038
   AsianMale |   .5307003   .5039565    -0.67   0.505     .0825169    3.413155
   BlackMale |   1.503692   .3265745     1.88   0.060     .9824118    2.301571
  LatinoMale |   1.135137   .3458897     0.42   0.677     .6247082    2.062621
   OtherMale |   3.378205   2.175333     1.89   0.059     .9562479    11.93443
-------------+----------------------------------------------------------------
3            |
      tenure |   1.020374   .0063983     3.22   0.001     1.007911    1.032992
       exper |   1.073651   .0103595     7.37   0.000     1.053538    1.094148
        male |   .9482301   .1089825    -0.46   0.644     .7569775    1.187803
         age |   .9667608   .0081388    -4.02   0.000     .9509399     .982845
pyacctrati~2 |   1.311122   .0992363     3.58   0.000     1.130361    1.520788
pyperstudlep |   1.020112   .0057161     3.55   0.000      1.00897    1.031377
pyperstude~s |   1.008074   .0037401     2.17   0.030      1.00077    1.015431
pyperstudw~e |   1.001253   .0087541     0.14   0.886      .984241    1.018558
pyperstudb~k |   .9931319   .0095127    -0.72   0.472     .9746612    1.011953
pyperstudl~o |   .9773406   .0089028    -2.52   0.012     .9600462    .9949466
pyperstudm~e |   .9998277   .0067711    -0.03   0.980     .9866443    1.013187
       Asian |    1.34208   .9964245     0.40   0.692     .3131885    5.751103
       Black |   .7758017    .129104    -1.53   0.127     .5598854    1.074985
      Latino |   2.255179   .4705676     3.90   0.000     1.498196    3.394638
       Other |    .251714   .1637841    -2.12   0.034     .0703156    .9010799
   AsianMale |   1.024518   1.096794     0.02   0.982     .1256809    8.351607
   BlackMale |    2.68732   .6741098     3.94   0.000     1.643603    4.393816
  LatinoMale |    1.80006   .6008779     1.76   0.078     .9357235    3.462793
   OtherMale |   2.457194     2.3109     0.96   0.339     .3889698    15.52255
------------------------------------------------------------------------------


---------->  region = 11

Iteration 0:   log likelihood = -2573.0985
```

```
Iteration 1:   log likelihood = -2433.2752
Iteration 2:   log likelihood = -2429.8054
Iteration 3:   log likelihood = -2429.7941
Iteration 4:   log likelihood = -2429.7941

Multinomial logistic regression                 Number of obs   =       2384
                                                LR chi2(38)     =     286.61
                                                Prob > chi2     =     0.0000
Log likelihood = -2429.7941                     Pseudo R2       =     0.0557

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.000915   .0079558     0.12   0.908     .9854425     1.01663
       exper |   .9992453   .0097204    -0.08   0.938     .9803741     1.01848
        male |   1.319464   .1517441     2.41   0.016     1.053187    1.653063
         age |    .989248   .0078886    -1.36   0.175     .9739068    1.004831
pyacctrati~2 |   1.040763   .0948858     0.44   0.661     .8704585    1.244387
pyperstudlep |   .9963819   .0069764    -0.52   0.605     .9828017     1.01015
pyperstude~s |   .9979472   .0036857    -0.56   0.578     .9907495    1.005197
pyperstudw~e |   1.000868   .0125221     0.07   0.945     .9766237    1.025714
pyperstudb~k |   1.002867   .0137287     0.21   0.834     .9763166    1.030139
pyperstudl~o |   1.008407   .0134239     0.63   0.529     .9824367    1.035063
pyperstudm~e |   .9892983   .0079299    -1.34   0.180     .9738774    1.004963
       Asian |   .3786783   .4250702    -0.87   0.387     .0419554    3.417848
       Black |   1.616388   .3274299     2.37   0.018     1.086723    2.404211
      Latino |   1.454452   .3875475     1.41   0.160     .8627634    2.451925
       Other |   .7270843   .3965576    -0.58   0.559     .2496506    2.117566
   AsianMale |   9.059169   14.65116     1.36   0.173     .3805945    215.6325
   BlackMale |   1.229563   .4450989     0.57   0.568     .6048086    2.499676
  LatinoMale |   .6530041   .2416007    -1.15   0.249     .3162172    1.348486
   OtherMale |   .9271795   .7301857    -0.10   0.924     .1980676    4.340246
-------------+----------------------------------------------------------------
3            |
      tenure |   .9940958   .0074258    -0.79   0.428     .9796475    1.008757
       exper |    1.07504   .0116096     6.70   0.000     1.052525    1.098037
        male |   1.557095   .1960861     3.52   0.000      1.21653    1.993001
         age |   .9923125     .00949    -0.81   0.420     .9738856    1.011088
pyacctrati~2 |   1.618096   .1553186     5.01   0.000     1.340599    1.953034
pyperstudlep |   1.016342   .0080286     2.05   0.040     1.000727      1.0322
pyperstude~s |   1.020285   .0044385     4.62   0.000     1.011623    1.029022
pyperstudw~e |   1.011158   .0141104     0.80   0.427      .983877    1.039196
pyperstudb~k |   .9998032   .0154099    -0.01   0.990     .9700519    1.030467
pyperstudl~o |   .9930203   .0149826    -0.46   0.642     .9640848    1.022824
pyperstudm~e |   .9821775   .0091425    -1.93   0.053      .964421    1.000261
       Asian |   .4855507   .5640074    -0.62   0.534     .0498303    4.731249
       Black |   1.363797   .3396803     1.25   0.213     .8370308    2.222072
      Latino |   2.033639   .5749757     2.51   0.012     1.168454    3.539453
       Other |   .6020567   .3674262    -0.83   0.406     .1820379    1.991191
   AsianMale |   3.094617   5.766999     0.61   0.544     .0802312    119.3632
   BlackMale |   1.911368   .7836383     1.58   0.114     .8557789    4.269007
  LatinoMale |   .4216432   .1757699    -2.07   0.038      .186254    .9545188
   OtherMale |   1.112804   .9949239     0.12   0.905     .1929236    6.418772
------------------------------------------------------------------------------


--------->  region = 12

Iteration 0:   log likelihood = -892.86367
Iteration 1:   log likelihood = -829.72769
Iteration 2:   log likelihood = -827.66131
Iteration 3:   log likelihood = -827.40728
Iteration 4:   log likelihood = -827.36394
Iteration 5:   log likelihood =  -827.3543
```

```
Iteration 6:   log likelihood = -827.35196
Iteration 7:   log likelihood = -827.35147
Iteration 8:   log likelihood = -827.35137
Iteration 9:   log likelihood = -827.35135
Iteration 10:  log likelihood = -827.35134

Multinomial logistic regression                 Number of obs   =        827
                                                LR chi2(38)     =     131.02
                                                Prob > chi2     =     0.0000
Log likelihood = -827.35134                     Pseudo R2       =     0.0734

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.00776   .0125769     0.62   0.536     .9834088    1.032714
       exper |   1.002453   .0168681     0.15   0.884     .9699312    1.036065
        male |   .8076013   .1714864    -1.01   0.314      .532663    1.224451
         age |   .9707723   .0148603    -1.94   0.053     .9420791    1.000339
pyacctrati~2 |    1.03807   .1788374     0.22   0.828     .7405985    1.455026
pyperstudlep |   .9886613   .0196936    -0.57   0.567     .9508063    1.028023
pyperstude~s |   .9924046   .0079654    -0.95   0.342     .9769149     1.00814
pyperstudw~e |   .8850847   .0509378    -2.12   0.034     .7906732    .9907696
pyperstudb~k |   .9085305   .0560594    -1.55   0.120       .80504    1.025325
pyperstudl~o |   .9101093   .0527137    -1.63   0.104     .8124409    1.019519
pyperstudm~e |   1.005015   .0101067     0.50   0.619     .9853998     1.02502
       Asian |   2.98e-07   .0004678    -0.01   0.992            0           .
       Black |   1.041727   .3644897     0.12   0.907     .5247196    2.068144
      Latino |   1.109538   .6100269     0.19   0.850     .3777017     3.25938
       Other |   .1599658   .1851656    -1.58   0.113     .0165476    1.546395
   AsianMale |    3383845   5.32e+09     0.01   0.992            0           .
   BlackMale |   .8292369   .4524799    -0.34   0.731      .284586     2.41626
  LatinoMale |   3.187255   3.162898     1.17   0.243     .4557431    22.29017
   OtherMale |   17.36958    32.2177     1.54   0.124     .4580906    658.6085
-------------+----------------------------------------------------------------
3            |
      tenure |   1.003824   .0110068     0.35   0.728     .9824813    1.025631
       exper |   1.027121   .0162541     1.69   0.091     .9957523    1.059477
        male |    1.50868    .292809     2.12   0.034      1.03132    2.206992
         age |   .9920696   .0147836    -0.53   0.593     .9635134    1.021472
pyacctrati~2 |   1.637167   .2381385     3.39   0.001      1.23106    2.177242
pyperstudlep |   1.033832    .019615     1.75   0.079     .9960938    1.073001
pyperstude~s |   1.016577   .0078904     2.12   0.034      1.00123    1.032161
pyperstudw~e |   .9455299   .0556784    -0.95   0.342     .8424641    1.061204
pyperstudb~k |   .9408572   .0590146    -0.97   0.331     .8320179    1.063934
pyperstudl~o |   .9282528   .0553935    -1.25   0.212     .8257921    1.043426
pyperstudm~e |   .9847273   .0117667    -1.29   0.198      .961933    1.008062
       Asian |   .8181408   1.029876    -0.16   0.873     .0693961    9.645422
       Black |   1.654894   .6312971     1.32   0.187     .7835376    3.495268
      Latino |   .9956467   .6210772    -0.01   0.994     .2931784     3.38126
       Other |   2.58e-07   .0003204    -0.01   0.990            0           .
   AsianMale |   6.32e-07   .0012501    -0.01   0.994            0           .
   BlackMale |   .5523606   .3112549    -1.05   0.292     .1830506    1.666765
  LatinoMale |   2.972426   3.209278     1.01   0.313     .3581651    24.66828
   OtherMale |    7499267   9.31e+09     0.01   0.990            0           .
------------------------------------------------------------------------------


---------->  region = 13

Iteration 0:   log likelihood = -1544.5731
Iteration 1:   log likelihood = -1472.1019
Iteration 2:   log likelihood = -1471.1306
Iteration 3:   log likelihood = -1471.1025
Iteration 4:   log likelihood = -1471.0979
```

```
Iteration 5:   log likelihood = -1471.0968
Iteration 6:   log likelihood = -1471.0966
Iteration 7:   log likelihood = -1471.0965
Iteration 8:   log likelihood = -1471.0965

Multinomial logistic regression                 Number of obs   =       1429
                                                LR chi2(38)     =     146.95
                                                Prob > chi2     =     0.0000
Log likelihood = -1471.0965                     Pseudo R2       =     0.0476

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.005998   .0106592     0.56   0.573     .9853213    1.027108
       exper |   .9813221   .0112713    -1.64   0.101     .9594776    1.003664
        male |   .9700502   .1538184    -0.19   0.848     .7109209    1.323632
         age |   .9841263   .0096617    -1.63   0.103     .9653708    1.003246
pyacctrati~2 |   1.091784   .1310759     0.73   0.465     .8628682    1.381431
pyperstudlep |   .9983104   .0073362    -0.23   0.818     .9840348    1.012793
pyperstude~s |   1.006128   .0068551     0.90   0.370     .9927813    1.019654
pyperstudw~e |   .9708527   .0186292    -1.54   0.123     .9350183    1.008061
pyperstudb~k |   .9669368   .0218485    -1.49   0.137     .9250489    1.010721
pyperstudl~o |   .9676216   .0197378    -1.61   0.107     .9296993    1.007091
pyperstudm~e |    1.00472   .0078243     0.60   0.545     .9895009    1.020173
       Asian |   1.413904    1.17407     0.42   0.677     .2777179    7.198398
       Black |   2.172943    .611006     2.76   0.006     1.252277    3.770476
      Latino |   1.450676    .317333     1.70   0.089     .9448683    2.227252
       Other |   1.149681    1.16368     0.14   0.890      .158129    8.358793
   AsianMale |   538032.2   4.53e+08     0.02   0.987            0           .
   BlackMale |    1.39128   .6790455     0.68   0.499      .534523    3.621284
  LatinoMale |   2.157711   .8035469     2.07   0.039     1.039919    4.476996
   OtherMale |   1.654012   2.024333     0.41   0.681      .150231    18.21033
-------------+----------------------------------------------------------------
3            |
      tenure |   1.018772    .010328     1.83   0.067      .998729    1.039217
       exper |   1.024172   .0127608     1.92   0.055     .9994646    1.049491
        male |   .9013297   .1504667    -0.62   0.534     .6498083    1.250207
         age |    .994134   .0111198    -0.53   0.599     .9725768    1.016169
pyacctrati~2 |   1.529117   .1900206     3.42   0.001      1.19857    1.950823
pyperstudlep |   1.000272   .0078116     0.03   0.972     .9850779      1.0157
pyperstude~s |   1.028056   .0074914     3.80   0.000     1.013478    1.042844
pyperstudw~e |   .9670055   .0199117    -1.63   0.103     .9287563     1.00683
pyperstudb~k |   .9515276   .0235712    -2.01   0.045     .9064326    .9988661
pyperstudl~o |   .9508699   .0207366    -2.31   0.021     .9110833     .992394
pyperstudm~e |   .9859787   .0103734    -1.34   0.180     .9658554    1.006521
       Asian |   .5530512   .6480975    -0.51   0.613      .055626    5.498608
       Black |   .6792042   .2629716    -1.00   0.318     .3180062    1.450658
      Latino |   1.220517   .2888723     0.84   0.400     .7675053    1.940915
       Other |    3.49861   3.106127     1.41   0.158     .6140222    19.93458
   AsianMale |   5.992058    8123.96     0.00   0.999            0           .
   BlackMale |   3.483002   2.071821     2.10   0.036     1.085493    11.17585
  LatinoMale |   1.757176   .7318799     1.35   0.176     .7767512    3.975104
   OtherMale |   .1783586   .2564296    -1.20   0.230     .0106538    2.985954
------------------------------------------------------------------------------


--------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -242.51841
Iteration 1:   log likelihood = -206.14306
Iteration 2:   log likelihood = -202.74889
Iteration 3:   log likelihood = -199.54376
```

```
Iteration 4:   log likelihood = -199.43552
Iteration 5:   log likelihood = -199.41193
Iteration 6:   log likelihood = -199.40634
Iteration 7:   log likelihood = -199.40513
Iteration 8:   log likelihood = -199.40487
Iteration 9:   log likelihood = -199.40482
Iteration 10:  log likelihood =  -199.4048

Multinomial logistic regression                 Number of obs   =        254
                                                LR chi2(34)     =      86.23
                                                Prob > chi2     =     0.0000
Log likelihood =  -199.4048                     Pseudo R2       =     0.1778

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.000933   .0349327     0.03   0.979     .9347555    1.071796
       exper |   1.072016   .0592027     1.26   0.208     .9620399    1.194564
        male |   6.134415    3.81769     2.91   0.004     1.811493     20.7735
         age |   .9077183   .0472187    -1.86   0.063     .8197327    1.005148
pyacctrati~2 |   .7513496   .3558291    -0.60   0.546     .2969781    1.900902
pyperstudlep |    1.04131   .1315427     0.32   0.749     .8129286    1.333851
pyperstude~s |   .9737255   .0242836    -1.07   0.286      .927275    1.022503
pyperstudw~e |   .6449947   .2360129    -1.20   0.231     .3148394    1.321366
pyperstudb~k |    .636041   .2557745    -1.13   0.260     .2891925    1.398889
pyperstudl~o |   .6614364   .2386772    -1.15   0.252     .3260879    1.341657
pyperstudm~e |   1.009268   .0439352     0.21   0.832     .9267274    1.099159
       Asian |  (omitted)
       Black |   2.05e-06   .0025832    -0.01   0.992            0           .
      Latino |   5.75e-06    .006056    -0.01   0.991            0           .
       Other |   6.34e-06   .0098083    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   569407.7   2.27e+09     0.00   0.997            0           .
  LatinoMale |    2180495   2.30e+09     0.01   0.989            0           .
   OtherMale |   1.93e+14   3.85e+18     0.00   0.999            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.006833   .0223898     0.31   0.759     .9638926    1.051687
       exper |   1.048284   .0321736     1.54   0.124      .987084    1.113278
        male |   3.826571   1.341226     3.83   0.000     1.925133    7.606042
         age |   .9414594   .0253736    -2.24   0.025     .8930188    .9925276
pyacctrati~2 |    2.22423   .5348638     3.32   0.001     1.388322    3.563439
pyperstudlep |   1.046221    .058999     0.80   0.423     .9367466     1.16849
pyperstude~s |   1.034747   .0146778     2.41   0.016     1.006376    1.063919
pyperstudw~e |   1.020142   .2339083     0.09   0.931     .6508612    1.598941
pyperstudb~k |    .992248   .2482792    -0.03   0.975      .607622    1.620343
pyperstudl~o |   1.014375   .2299532     0.06   0.950     .6504824    1.581835
pyperstudm~e |   .9505733   .0258672    -1.86   0.062     .9012029    1.002648
       Asian |  (omitted)
       Black |   2.846937   3.813011     0.78   0.435     .2062203    39.30289
      Latino |   2.679947   2.792488     0.95   0.344     .3476797    20.65727
       Other |   1.677188   2.671677     0.32   0.745     .0739026    38.06305
   AsianMale |  (omitted)
   BlackMale |    3766510   6.03e+09     0.01   0.992            0           .
  LatinoMale |    1.19729   1.964557     0.11   0.913     .0480305     29.8457
   OtherMale |   .0749499   2274.704    -0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 15

note: Asian omitted because of collinearity
note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
```

```
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -272.36452
Iteration 1:   log likelihood = -239.87152
Iteration 2:   log likelihood = -236.45057
Iteration 3:   log likelihood =  -236.3656
Iteration 4:   log likelihood =  -236.3634
Iteration 5:   log likelihood = -236.36301
Iteration 6:   log likelihood = -236.36292
Iteration 7:   log likelihood =  -236.3629

Multinomial logistic regression                 Number of obs   =        268
                                                LR chi2(30)     =      72.00
                                                Prob > chi2     =     0.0000
Log likelihood =  -236.3629                     Pseudo R2       =     0.1322

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.067301   .0383137     1.81   0.070     .9947879    1.145099
       exper |   .9405068    .037644    -1.53   0.125     .8695457    1.017259
        male |   1.415896   .7850288     0.63   0.531     .4776303    4.197311
         age |   1.050048      .0329     1.56   0.119     .9875054    1.116552
pyacctrati~2 |   .3055756   .1613461    -2.25   0.025     .1085621    .8601203
pyperstudlep |   .9397897    .043726    -1.33   0.182     .8578798     1.02952
pyperstude~s |   .9979793   .0170623    -0.12   0.906      .965092    1.031987
pyperstudw~e |   1.032945    .326329     0.10   0.918     .5561156    1.918623
pyperstudb~k |   1.218756   .4273175     0.56   0.573     .6130144    2.423055
pyperstudl~o |   1.029032   .3251922     0.09   0.928     .5539039    1.911717
pyperstudm~e |   .9662631   .0387168    -0.86   0.392     .8932828    1.045206
       Asian |  (omitted)
       Black |    7904674   5.40e+09     0.02   0.981           0           .
      Latino |   7.245263   4.985106     2.88   0.004     1.880982    27.90768
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   7.30e-07   .0004987    -0.02   0.983           0           .
  LatinoMale |   .6034704   .5735371    -0.53   0.595     .0936862    3.887194
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |    .980802   .0208481    -0.91   0.362     .9407799    1.022527
       exper |   1.069114   .0302797     2.36   0.018     1.011384    1.130139
        male |   .9589042   .3260076    -0.12   0.902     .4924751    1.867094
         age |   .9881032   .0249742    -0.47   0.636     .9403473    1.038284
pyacctrati~2 |     1.1295    .306538     0.45   0.654     .6635542    1.922631
pyperstudlep |   1.023346   .0282801     0.84   0.404     .9693928    1.080303
pyperstude~s |   1.010462   .0112064     0.94   0.348     .9887351    1.032667
pyperstudw~e |   .9588187   .2038587    -0.20   0.843     .6320606    1.454502
pyperstudb~k |    .885667   .2015432    -0.53   0.594     .5669833    1.383473
pyperstudl~o |   .9480615     .20113    -0.25   0.801     .6255402    1.436871
pyperstudm~e |   1.013842   .0218227     0.64   0.523     .9719595    1.057528
       Asian |  (omitted)
       Black |   1.271444   1309.483     0.00   1.000           0           .
      Latino |   .9874384    .569976    -0.02   0.983      .318547    3.060881
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   3.503539    3608.36     0.00   0.999           0           .
  LatinoMale |   .7123028   .6071109    -0.40   0.691     .1340193    3.785838
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 16

note: Asian omitted because of collinearity
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -506.93704
Iteration 1:   log likelihood = -455.05451
Iteration 2:   log likelihood = -452.57734
Iteration 3:   log likelihood = -452.43233
Iteration 4:   log likelihood = -452.39897
Iteration 5:   log likelihood = -452.39213
Iteration 6:   log likelihood = -452.39069
Iteration 7:   log likelihood = -452.39037
Iteration 8:   log likelihood = -452.39029
Iteration 9:   log likelihood = -452.39027

Multinomial logistic regression                 Number of obs   =        468
                                                LR chi2(34)     =     109.09
                                                Prob > chi2     =     0.0000
Log likelihood = -452.39027                     Pseudo R2       =     0.1076

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.072095   .0242197     3.08   0.002      1.02566    1.120631
       exper |   .9209834   .0241517    -3.14   0.002     .8748429    .9695575
        male |   1.208714   .3290602     0.70   0.486     .7089128    2.060889
         age |   .9681724   .0202154    -1.55   0.121     .9293508    1.008616
pyacctrati~2 |   .8554419   .1905653    -0.70   0.483     .5528023    1.323766
pyperstudlep |   .9990766   .0187029    -0.05   0.961     .9630839    1.036414
pyperstude~s |   .9792978      .0089    -2.30   0.021     .9620086    .9968977
pyperstudw~e |   .9397032   .0312134    -1.87   0.061     .8804749    1.002916
pyperstudb~k |    .981422   .0363056    -0.51   0.612     .9127828    1.055223
pyperstudl~o |   .9573319   .0300646    -1.39   0.165     .9001832    1.018109
pyperstudm~e |   1.002705    .012829     0.21   0.833     .9778733    1.028167
       Asian |  (omitted)
       Black |   .3320182   .4260711    -0.86   0.390     .0268433    4.106659
      Latino |   3.629771   2.431583     1.92   0.054     .9764711    13.49271
       Other |   5.586828    9.44493     1.02   0.309     .2033053     153.526
   AsianMale |  (omitted)
   BlackMale |   1.31e-06   .0011012    -0.02   0.987            0           .
  LatinoMale |   .7187118   1.010743    -0.23   0.814     .0456549    11.31415
   OtherMale |   1.21e+07   3.63e+10     0.01   0.996            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.027296   .0165251     1.67   0.094     .9954123      1.0602
       exper |   1.028624   .0224837     1.29   0.197     .9854872    1.073649
        male |   2.217751   .5457652     3.24   0.001     1.369118    3.592399
         age |   .9560888   .0198619    -2.16   0.031      .917942    .9958208
pyacctrati~2 |   1.546136   .2919653     2.31   0.021     1.067851    2.238642
pyperstudlep |   1.037345   .0169036     2.25   0.024     1.004738     1.07101
pyperstude~s |   1.005103   .0077157     0.66   0.507     .9900937     1.02034
pyperstudw~e |   1.031723   .0416265     0.77   0.439     .9532788    1.116622
pyperstudb~k |    1.04494   .0453026     1.01   0.311     .9598166    1.137613
pyperstudl~o |   1.021488   .0400154     0.54   0.587     .9459943    1.103006
pyperstudm~e |   .9648013   .0164232    -2.11   0.035     .9331434    .9975332
       Asian |  (omitted)
       Black |   1.507654   1.543678     0.40   0.688      .202657     11.2161
      Latino |    2.03389   1.454095     0.99   0.321      .500928    8.258089
       Other |   1.77e-06   .0016074    -0.01   0.988            0           .
   AsianMale |  (omitted)
   BlackMale |   .2342922   .3750593    -0.91   0.365     .0101657    5.399792
  LatinoMale |   1.684273    2.27173     0.39   0.699     .1197625    23.68669
   OtherMale |   387124.3   1.74e+09     0.00   0.998            0           .
------------------------------------------------------------------------------


--------->  region = 17
```

```
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -460.40979
Iteration 1:   log likelihood = -409.50513
Iteration 2:   log likelihood = -406.88023
Iteration 3:   log likelihood = -406.70356
Iteration 4:   log likelihood = -406.66383
Iteration 5:   log likelihood = -406.65417
Iteration 6:   log likelihood = -406.65213
Iteration 7:   log likelihood =  -406.6517
Iteration 8:   log likelihood = -406.65161
Iteration 9:   log likelihood = -406.65158

Multinomial logistic regression                 Number of obs   =        452
                                                LR chi2(34)     =     107.52
                                                Prob > chi2     =     0.0000
Log likelihood = -406.65158                     Pseudo R2       =     0.1168

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9975173   .0227854    -0.11   0.913     .9538436    1.043191
       exper |   1.026046    .031248     0.84   0.399      .966593    1.089156
        male |    1.92147   .6401862     1.96   0.050     1.000079    3.691755
         age |   .9704097   .0266368    -1.09   0.274     .9195821    1.024047
pyacctrati~2 |   1.078046   .3139725     0.26   0.796     .6091604    1.907845
pyperstudlep |   .9864094   .0431533    -0.31   0.754      .905355     1.07472
pyperstude~s |   .9812933   .0133543    -1.39   0.165     .9554654    1.007819
pyperstudw~e |   1.120597   .1180283     1.08   0.280     .9115821    1.377538
pyperstudb~k |   1.136153   .1232467     1.18   0.239     .9185455    1.405312
pyperstudl~o |   1.120477   .1199065     1.06   0.288     .9084745    1.381953
pyperstudm~e |   1.005131   .0142039     0.36   0.717     .9776735    1.033359
       Asian |   7.47e-07   .0015812    -0.01   0.995            0           .
       Black |   2.14e-06    .001992    -0.01   0.989            0           .
      Latino |   2.783172   1.890805     1.51   0.132     .7349515    10.53953
       Other |   .8907752    2476.09    -0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   1.04e+12   1.27e+15     0.02   0.982            0           .
  LatinoMale |   2.424625   2.408488     0.89   0.373     .3460256    16.98952
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9974686    .017027    -0.15   0.882     .9646485    1.031405
       exper |   1.047848   .0232372     2.11   0.035     1.003279    1.094396
        male |   3.519892   .9223525     4.80   0.000     2.106107     5.88272
         age |   .9839524   .0197159    -0.81   0.419      .946059    1.023364
pyacctrati~2 |   1.490615   .3258616     1.83   0.068     .9711481    2.287946
pyperstudlep |   .9889181   .0254503    -0.43   0.665     .9402735    1.040079
pyperstude~s |   1.041583   .0116389     3.65   0.000     1.019019    1.064647
pyperstudw~e |   1.053405   .0852173     0.64   0.520     .8989506    1.234398
pyperstudb~k |   1.019536   .0860699     0.23   0.819     .8640589    1.202988
pyperstudl~o |   1.031389   .0850896     0.37   0.708     .8774014    1.212402
pyperstudm~e |   .9717532   .0148296    -1.88   0.060     .9431181    1.001258
       Asian |   4.19e-06   .0056911    -0.01   0.993            0           .
       Black |   2.084427   2.867218     0.53   0.593     .1406446    30.89231
      Latino |   2.155143   1.229395     1.35   0.178     .7045477    6.592372
       Other |   3.83e+07   5.43e+10     0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   806665.1   6.37e+08     0.02   0.986            0           .
  LatinoMale |   1.344935   1.201963     0.33   0.740     .2333383    7.752055
   OtherMale |  (omitted)
------------------------------------------------------------------------------
```

```
---------->  region = 18

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -406.99158
Iteration 1:   log likelihood =  -358.6355
Iteration 2:   log likelihood = -355.84989
Iteration 3:   log likelihood = -355.70264
Iteration 4:   log likelihood = -355.67088
Iteration 5:   log likelihood = -355.66301
Iteration 6:   log likelihood = -355.66142
Iteration 7:   log likelihood = -355.66107
Iteration 8:   log likelihood =   -355.661
Iteration 9:   log likelihood = -355.66098

Multinomial logistic regression                 Number of obs   =        387
                                                LR chi2(34)     =     102.66
                                                Prob > chi2     =     0.0000
Log likelihood = -355.66098                     Pseudo R2       =     0.1261

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9995572   .0239144    -0.02   0.985     .9537678    1.047545
       exper |   1.002641   .0294181     0.09   0.928     .9466087    1.061989
        male |   1.237548   .4460167     0.59   0.554     .6106408    2.508061
         age |   .9633488   .0227085    -1.58   0.113     .9198535    1.008901
pyacctrati~2 |   .3141254   .1139671    -3.19   0.001     .1542698    .6396249
pyperstudlep |   .9743774   .0243658    -1.04   0.299     .9277727    1.023323
pyperstude~s |    1.00657   .0161363     0.41   0.683     .9754355    1.038699
pyperstudw~e |   .5979242   .0891465    -3.45   0.001     .4464139    .8008563
pyperstudb~k |   .6111462   .0932419    -3.23   0.001     .4531878     .824161
pyperstudl~o |   .5970721    .089509    -3.44   0.001     .4450619    .8010012
pyperstudm~e |   .9752926   .0171745    -1.42   0.155     .9422055    1.009542
       Asian |  (omitted)
       Black |   12.92706   15.19167     2.18   0.029      1.29176    129.3652
      Latino |   2.535341   1.237294     1.91   0.057     .9741679    6.598403
       Other |   4.274799    11766.8     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |     161904   8.59e+07     0.02   0.982            0           .
  LatinoMale |   .7884144   .5069673    -0.37   0.712     .2235701    2.780323
   OtherMale |    4768502   1.80e+10     0.00   0.997            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9955651   .0187377    -0.24   0.813     .9595089    1.032976
       exper |   1.059403   .0275948     2.22   0.027     1.006676    1.114892
        male |    1.38137    .425223     1.05   0.294     .7555919    2.525416
         age |    .965055   .0220076    -1.56   0.119     .9228707    1.009168
pyacctrati~2 |   1.475062   .3862374     1.48   0.138     .8829324    2.464297
pyperstudlep |    .984829   .0194024    -0.78   0.438     .9475258    1.023601
pyperstude~s |   1.062381    .015599     4.12   0.000     1.032243    1.093399
pyperstudw~e |   .7983287   .1144782    -1.57   0.116     .6027286    1.057406
pyperstudb~k |   .7632318   .1146917    -1.80   0.072     .5685196    1.024631
pyperstudl~o |   .7690517    .111406    -1.81   0.070     .5789608    1.021555
pyperstudm~e |   .9581637   .0207925    -1.97   0.049     .9182656    .9997954
       Asian |  (omitted)
       Black |   3.996749   5.037109     1.10   0.272     .3380154    47.25822
      Latino |   1.138081   .4734625     0.31   0.756     .5035673    2.572104
       Other |    3157688   4.92e+09     0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |    237904.2   1.26e+08     0.02   0.981            0           .
  LatinoMale |   .7907624   .4639771    -0.40   0.689      .250384    2.497385
   OtherMale |   3.98e-07   .0017585    -0.00   0.997            0           .
```

```
-------------------------------------------------------------------------------


---------> region = 19

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -791.08657
Iteration 1:   log likelihood = -723.85766
Iteration 2:   log likelihood = -720.97851
Iteration 3:   log likelihood = -720.85858
Iteration 4:   log likelihood = -720.83068
Iteration 5:   log likelihood = -720.82471
Iteration 6:   log likelihood = -720.82347
Iteration 7:   log likelihood = -720.82319
Iteration 8:   log likelihood = -720.82312
Iteration 9:   log likelihood = -720.82311

Multinomial logistic regression                 Number of obs   =        729
                                                LR chi2(36)     =     140.53
                                                Prob > chi2     =     0.0000
Log likelihood = -720.82311                     Pseudo R2       =     0.0888

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.023493   .0147212     1.61   0.106     .9950427    1.052756
       exper |   1.019838     .01791     1.12   0.263     .9853323    1.055552
        male |   1.241385   .3978368     0.67   0.500     .6623922    2.326473
         age |   .9722642   .0142673    -1.92   0.055     .9446991    1.000634
pyacctrati~2 |    .901919   .1853659    -0.50   0.615     .6028722    1.349304
pyperstudlep |   1.014472   .0063865     2.28   0.022     1.002031    1.027066
pyperstude~s |   .9847381   .0100715    -1.50   0.133     .9651949    1.004677
pyperstudw~e |   .8313313   .0926701    -1.66   0.097     .6681732     1.03433
pyperstudb~k |   .8793287   .1029117    -1.10   0.272     .6990872    1.106041
pyperstudl~o |    .859762   .0903012    -1.44   0.150     .6998036    1.056283
pyperstudm~e |   1.005981   .0102346     0.59   0.558     .9861205    1.026242
       Asian |   .3745243   1437.106    -0.00   1.000            0           .
       Black |   .7811449   .5189007    -0.37   0.710     .2124679    2.871903
      Latino |    1.11753   .2832463     0.44   0.661     .6800104    1.836549
       Other |    3257883   4.04e+09     0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   3.822199   4.204145     1.22   0.223     .4426422    33.00455
  LatinoMale |    1.09221   .4257067     0.23   0.821     .5087872    2.344638
   OtherMale |   2.11e-07   .0002616    -0.01   0.990            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.049148   .0159213     3.16   0.002     1.018403    1.080822
       exper |   1.077349   .0219627     3.65   0.000     1.035152    1.121267
        male |   1.712689   .5910048     1.56   0.119     .8708653    3.368265
         age |   .9794787   .0175354    -1.16   0.247      .945706    1.014458
pyacctrati~2 |   1.229291   .2797892     0.91   0.364     .7868994    1.920392
pyperstudlep |   1.024627   .0073064     3.41   0.001     1.010406    1.039047
pyperstude~s |     1.0242   .0124463     1.97   0.049     1.000094    1.048887
pyperstudw~e |   .9016428   .1083308    -0.86   0.389      .712466    1.141051
pyperstudb~k |   .9097121   .1206849    -0.71   0.476     .7014251     1.17985
pyperstudl~o |    .880177   .1025164    -1.10   0.273     .7005328    1.105889
pyperstudm~e |   .9707482   .0154706    -1.86   0.062     .9408951    1.001549
       Asian |   477089.2   1.29e+09     0.00   0.996            0           .
       Black |   .7100307   .5538487    -0.44   0.661     .1539254    3.275247
      Latino |   .9144782   .2624652    -0.31   0.755     .5210378    1.605009
       Other |   1.119174   2003.965     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   3.342502   4.215113     0.96   0.339     .2822611    39.58151
  LatinoMale |   .5633558   .2479503    -1.30   0.192     .2377621     1.33482
```

```
   OtherMale |   1.89e-06    .003724    -0.01   0.995           0           .
------------------------------------------------------------------------------


--------->  region = 20

Iteration 0:   log likelihood = -2090.3193
Iteration 1:   log likelihood = -1981.5148
Iteration 2:   log likelihood = -1976.8499
Iteration 3:   log likelihood = -1976.5311
Iteration 4:   log likelihood = -1976.4776
Iteration 5:   log likelihood = -1976.4657
Iteration 6:   log likelihood = -1976.4627
Iteration 7:   log likelihood = -1976.4621
Iteration 8:   log likelihood =  -1976.462
Iteration 9:   log likelihood = -1976.4619
Iteration 10:  log likelihood = -1976.4619

Multinomial logistic regression                 Number of obs   =       2048
                                                LR chi2(38)     =     227.71
                                                Prob > chi2     =     0.0000
Log likelihood = -1976.4619                     Pseudo R2       =     0.0545

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    .997434   .0083944    -0.31   0.760     .9811162    1.014023
       exper |   1.010798   .0105222     1.03   0.302     .9903839    1.031633
        male |   1.466052   .2191949     2.56   0.011     1.093662    1.965241
         age |   .9708009   .0085217    -3.38   0.001     .9542414    .9876477
pyacctrati~2 |   1.037245   .1130875     0.34   0.737     .8376786    1.284355
pyperstudlep |   .9799815   .0072645    -2.73   0.006     .9658464    .9943235
pyperstude~s |   1.004774    .005284     0.91   0.365     .9944706    1.015184
pyperstudw~e |   .9513493   .0388921    -1.22   0.222      .878096    1.030714
pyperstudb~k |   .9468824   .0410008    -1.26   0.207     .8698378    1.030751
pyperstudl~o |   .9523996   .0394256    -1.18   0.239     .8781786    1.032894
pyperstudm~e |   .9993946   .0075021    -0.08   0.936     .9847983    1.014207
       Asian |   .5242816    .592047    -0.57   0.567     .0573247    4.794985
       Black |   1.375719   .3760868     1.17   0.243     .8050687     2.35086
      Latino |   .9902755   .1542598    -0.06   0.950      .729727    1.343853
       Other |    .623672    .506825    -0.58   0.561     .1268324    3.066778
   AsianMale |   3.67e+07   1.46e+11     0.00   0.997           0           .
   BlackMale |   .9336018   .4118748    -0.16   0.876     .3932233    2.216584
  LatinoMale |    .991615   .2352689    -0.04   0.972     .6228571    1.578693
   OtherMale |   .5868847    .815932    -0.38   0.701     .0384722    8.952787
-------------+----------------------------------------------------------------
3            |
      tenure |    1.01889   .0084411     2.26   0.024     1.002479    1.035569
       exper |   1.082116   .0139568     6.12   0.000     1.055104    1.109819
        male |    1.62611   .2712619     2.91   0.004     1.172616    2.254989
         age |   .9543312   .0111654    -4.00   0.000     .9326964    .9764679
pyacctrati~2 |   1.263814   .1512548     1.96   0.050      .999563    1.597923
pyperstudlep |   1.014531   .0069381     2.11   0.035     1.001023    1.028221
pyperstude~s |   1.033112   .0062472     5.39   0.000      1.02094    1.045429
pyperstudw~e |   1.009955   .0474109     0.21   0.833     .9211775    1.107287
pyperstudb~k |   .9770068   .0487862    -0.47   0.641     .8859176    1.077462
pyperstudl~o |   .9805379   .0468189    -0.41   0.681     .8929375    1.076732
pyperstudm~e |   .9827139   .0088865    -1.93   0.054     .9654502    1.000286
       Asian |   4.42e-07   .0005751    -0.01   0.991           0           .
       Black |   1.337494   .4285343     0.91   0.364     .7137833    2.506211
      Latino |   .8523271    .145463    -0.94   0.349     .6100078    1.190905
       Other |   4.35e-07    .000439    -0.01   0.988           0           .
   AsianMale |    1523234   1.15e+10     0.00   0.998           0           .
   BlackMale |   .8554271   .4577413    -0.29   0.770     .2997111    2.441536
```

```
  LatinoMale |   .8709094   .2329358    -0.52   0.605     .5155945    1.471085
   OtherMale |    3841259   3.88e+09     0.02   0.988            0           .
------------------------------------------------------------------------------
by pyschooltype:
. bysort pyschooltype : mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian
Black Latino
>  Other AsianMale BlackMale LatinoMale OtherMale if validcert2005a==1, rrr


---------->  pyschooltype =
no observations


---------->  pyschooltype = B

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood =  -350.7425
Iteration 1:   log likelihood = -327.55515
Iteration 2:   log likelihood = -322.14884
Iteration 3:   log likelihood =  -321.9914
Iteration 4:   log likelihood = -321.97238
Iteration 5:   log likelihood = -321.96917
Iteration 6:   log likelihood = -321.96843
Iteration 7:   log likelihood = -321.96825
Iteration 8:   log likelihood = -321.96822
Iteration 9:   log likelihood = -321.96821

Multinomial logistic regression                 Number of obs   =        387
                                                LR chi2(32)     =      57.55
                                                Prob > chi2     =     0.0037
Log likelihood = -321.96821                     Pseudo R2       =     0.0820

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.049173   .0306662     1.64   0.101     .9907574    1.111033
       exper |     1.0213   .0482429     0.45   0.655     .9309911     1.12037
        male |   1.284791   .5976066     0.54   0.590     .5163038    3.197125
         age |   .9324639   .0371087    -1.76   0.079     .8624963    1.008107
pyacctrati~2 |   1.121177   .4396629     0.29   0.771      .519853    2.418064
pyperstudlep |    .986637   .0328384    -0.40   0.686     .9243293    1.053145
pyperstude~s |   .9680531   .0150068    -2.09   0.036     .9390827    .9979173
pyperstudw~e |   .9959537   .0346562    -0.12   0.907     .9302933    1.066248
pyperstudb~k |   1.056929   .0433222     1.35   0.177     .9753399    1.145343
pyperstudl~o |   1.029903   .0381197     0.80   0.426     .9578355    1.107393
pyperstudm~e |   .9607096   .0222058    -1.73   0.083     .9181582    1.005233
       Asian |  (omitted)
       Black |   .8585905   .7058452    -0.19   0.853     .1714018    4.300875
      Latino |    1.12029   1.386328     0.09   0.927     .0990812    12.66688
       Other |   6.57e-07   .0005179    -0.02   0.986            0           .
   AsianMale |  (omitted)
   BlackMale |   1.657899   1.676415     0.50   0.617     .2284809    12.03001
  LatinoMale |   1.611841   2.346976     0.33   0.743     .0928756    27.97325
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9669056    .015994    -2.03   0.042     .9360607     .998767
       exper |   1.015055   .0196523     0.77   0.440     .9772587    1.054313
        male |    1.25129   .3180997     0.88   0.378     .7602694    2.059435
         age |   .9864902   .0180695    -0.74   0.458     .9517029    1.022549
pyacctrati~2 |   .9029194   .1977773    -0.47   0.641     .5877601    1.387068
```

```
pyperstudlep |   .9865712   .0184461    -0.72   0.470     .9510719    1.023395
pyperstude~s |   .9971577   .0080985    -0.35   0.726     .9814107    1.013157
pyperstudw~e |   .9984531   .0279418    -0.06   0.956      .945163    1.054748
pyperstudb~k |   1.010635   .0313288     0.34   0.733     .9510602    1.073942
pyperstudl~o |     1.0069   .0288362     0.24   0.810     .9519388    1.065034
pyperstudm~e |   .9999809   .0091981    -0.00   0.998     .9821145    1.018172
       Asian |  (omitted)
       Black |    .308373    .266157    -1.36   0.173     .0568072    1.673975
      Latino |   .5516255   .4845061    -0.68   0.498      .098631    3.085143
       Other |   .9876339    1.08229    -0.01   0.991      .115296    8.460141
   AsianMale |  (omitted)
   BlackMale |   2.936095    2.99132     1.06   0.290     .3986193    21.62628
  LatinoMale |   2.649042   2.885691     0.89   0.371     .3132174    22.40431
   OtherMale |  (omitted)
-------------------------------------------------------------------------------


--------->  pyschooltype = E

Iteration 0:   log likelihood = -10893.698
Iteration 1:   log likelihood = -10281.717
Iteration 2:   log likelihood = -10275.618
Iteration 3:   log likelihood = -10275.612
Iteration 4:   log likelihood = -10275.612

Multinomial logistic regression                 Number of obs   =      10073
                                                LR chi2(38)     =    1236.17
                                                Prob > chi2     =     0.0000
Log likelihood = -10275.612                     Pseudo R2       =     0.0567

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.012605   .0043487     2.92   0.004     1.004117    1.021164
       exper |   1.009334   .0055889     1.68   0.093     .9984387    1.020347
        male |   1.482077   .1287728     4.53   0.000     1.250007    1.757231
         age |   .9767717   .0042666    -5.38   0.000     .9684451    .9851699
pyacctrati~2 |   .9099555     .03864    -2.22   0.026     .8372884    .9889292
pyperstudlep |   1.008606   .0019221     4.50   0.000     1.004846    1.012381
pyperstude~s |   .9865362    .002091    -6.40   0.000     .9824464     .990643
pyperstudw~e |   .9985351   .0055409    -0.26   0.792     .9877339    1.009454
pyperstudb~k |   .9997149   .0062372    -0.05   0.964     .9875646    1.012015
pyperstudl~o |   1.002302   .0058355     0.39   0.693     .9909295    1.013805
pyperstudm~e |   1.011644   .0036714     3.19   0.001     1.004473    1.018865
       Asian |   1.540349   .6251778     1.06   0.287     .6952551     3.41267
       Black |   1.319809   .1264013     2.90   0.004     1.093929    1.592328
      Latino |   1.100046   .0891301     1.18   0.239     .9385196    1.289373
       Other |   .7635972   .2328011    -0.88   0.376     .4201022     1.38795
   AsianMale |   .6654688   .5809662    -0.47   0.641     .1202302    3.683341
   BlackMale |   .6852973   .1356137    -1.91   0.056     .4649802    1.010005
  LatinoMale |   .8206711   .1232674    -1.32   0.188     .6113866    1.101596
   OtherMale |   1.813431    1.01624     1.06   0.288     .6046313    5.438903
-------------+----------------------------------------------------------------
3            |
      tenure |   1.018992   .0036684     5.23   0.000     1.011828    1.026208
       exper |   1.069595   .0055087    13.06   0.000     1.058853    1.080446
        male |   2.464079   .1872546    11.87   0.000     2.123091    2.859833
         age |   .9847831   .0042877    -3.52   0.000     .9764151    .9932229
pyacctrati~2 |   .9820937   .0389255    -0.46   0.648     .9086892    1.061428
pyperstudlep |   .9975773   .0018357    -1.32   0.187     .9939859    1.001182
pyperstude~s |   1.003557    .002018     1.77   0.077     .9996092     1.00752
pyperstudw~e |   1.009477    .005713     1.67   0.096     .9983419    1.020737
pyperstudb~k |   .9998593   .0063299    -0.02   0.982     .9875295    1.012343
pyperstudl~o |   1.001925   .0059539     0.32   0.746     .9903237    1.013663
```

```
pyperstudm~e |   .9983755   .0036636    -0.44   0.658     .9912208    1.005582
       Asian |   .8483788   .4332519    -0.32   0.747     .3118146    2.308252
       Black |   .9331104   .0918861    -0.70   0.482       .76933    1.131757
      Latino |   1.148116   .0904436     1.75   0.080     .9838564    1.339799
       Other |   .6261805    .195778    -1.50   0.134     .3392874    1.155663
   AsianMale |   1.073523   .9522686     0.08   0.936     .1886918    6.107588
   BlackMale |   .5305151   .1025093    -3.28   0.001     .3632649    .7747686
  LatinoMale |   .5878267   .0831537    -3.76   0.000     .4454907    .7756395
   OtherMale |   .4301692   .3056347    -1.19   0.235     .1068714    1.731478
------------------------------------------------------------------------------


---------->  pyschooltype = M

Iteration 0:   log likelihood = -6034.4814
Iteration 1:   log likelihood = -5733.9286
Iteration 2:   log likelihood = -5727.3951
Iteration 3:   log likelihood = -5727.3487
Iteration 4:   log likelihood = -5727.3487

Multinomial logistic regression                 Number of obs   =       5738
                                                LR chi2(38)     =     614.27
                                                Prob > chi2     =     0.0000
Log likelihood = -5727.3487                     Pseudo R2       =     0.0509

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.012849   .0050727     2.55   0.011     1.002955    1.022841
       exper |   1.006458   .0062636     1.03   0.301     .9942563     1.01881
        male |   1.608307   .1279052     5.98   0.000     1.376179    1.879591
         age |   .9725338   .0048965    -5.53   0.000     .9629841    .9821782
pyacctrati~2 |   .8919754   .0607311    -1.68   0.093      .780545    1.019314
pyperstudlep |   1.008246   .0039544     2.09   0.036     1.000526    1.016027
pyperstude~s |    .992661   .0026923    -2.72   0.007     .9873981    .9979519
pyperstudw~e |   .9998076   .0081516    -0.02   0.981     .9839576    1.015913
pyperstudb~k |   1.004776   .0090575     0.53   0.597     .9871793    1.022686
pyperstudl~o |   1.001475   .0086506     0.17   0.864     .9846632    1.018574
pyperstudm~e |   1.006909   .0042193     1.64   0.100     .9986737    1.015213
       Asian |    .915893    .381272    -0.21   0.833     .4050445    2.071031
       Black |   .9542911   .1134848    -0.39   0.694     .7558847    1.204776
      Latino |   2.110739   .2514078     6.27   0.000     1.671279    2.665755
       Other |   .7649229   .2921073    -0.70   0.483     .3618782    1.616862
   AsianMale |   2.344936   1.939751     1.03   0.303     .4634576    11.86457
   BlackMale |   1.482942    .267369     2.19   0.029     1.041491    2.111508
  LatinoMale |   .7716708   .1245488    -1.61   0.108      .562402    1.058808
   OtherMale |   1.032942   .5935295     0.06   0.955     .3349458    3.185497
-------------+----------------------------------------------------------------
3            |
      tenure |   1.006821   .0050933     1.34   0.179     .9968875    1.016853
       exper |   1.071954   .0079339     9.39   0.000     1.056516    1.087618
        male |   1.982824   .1741874     7.79   0.000     1.669197    2.355378
         age |   .9665818   .0063195    -5.20   0.000     .9542748    .9790476
pyacctrati~2 |   .9456298   .0728625    -0.73   0.468     .8130823    1.099785
pyperstudlep |   .9916983   .0051265    -1.61   0.107     .9817013    1.001797
pyperstude~s |   1.010524   .0032422     3.26   0.001     1.004189    1.016898
pyperstudw~e |   1.029295   .0112433     2.64   0.008     1.007492    1.051569
pyperstudb~k |   1.013433   .0122257     1.11   0.269     .9897519     1.03768
pyperstudl~o |   1.015017   .0117106     1.29   0.196      .992322    1.038231
pyperstudm~e |   .9928631   .0058866    -1.21   0.227     .9813923    1.004468
       Asian |   .4357554   .3306483    -1.09   0.274      .098482    1.928097
       Black |   .8120959   .1290392    -1.31   0.190     .5947773    1.108818
      Latino |   1.695446   .2541447     3.52   0.000     1.263834    2.274457
       Other |    .281286   .2094855    -1.70   0.089     .0653465    1.210804
```

```
   AsianMale |   1.331629   1.859825     0.21   0.838     .0862082    20.56921
   BlackMale |   1.839457   .4040783     2.77   0.006     1.195926    2.829276
  LatinoMale |     .84495   .1632277    -0.87   0.383      .578623    1.233861
   OtherMale |   3.334359   2.882591     1.39   0.164     .6125464    18.15038
------------------------------------------------------------------------------


---------->  pyschooltype = S

Iteration 0:   log likelihood = -6831.1206
Iteration 1:   log likelihood = -6538.6708
Iteration 2:   log likelihood = -6528.2176
Iteration 3:   log likelihood = -6527.9754
Iteration 4:   log likelihood = -6527.9221
Iteration 5:   log likelihood = -6527.9087
Iteration 6:   log likelihood = -6527.9062
Iteration 7:   log likelihood = -6527.9057
Iteration 8:   log likelihood = -6527.9056
Iteration 9:   log likelihood = -6527.9056

Multinomial logistic regression                 Number of obs   =       7060
                                                LR chi2(38)     =     606.43
                                                Prob > chi2     =     0.0000
Log likelihood = -6527.9056                     Pseudo R2       =     0.0444

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.004793   .0039239     1.22   0.221     .9971317    1.012513
       exper |   1.007666    .005175     1.49   0.137     .9975741     1.01786
        male |   1.160527   .0784322     2.20   0.028     1.016549    1.324898
         age |   .9692543   .0044225    -6.84   0.000      .960625     .977961
pyacctrati~2 |   .8901905   .0595216    -1.74   0.082     .7808512     1.01484
pyperstudlep |   1.018558   .0044308     4.23   0.000     1.009911     1.02728
pyperstude~s |   .9881208   .0022605    -5.22   0.000     .9837002    .9925613
pyperstudw~e |   .9974384   .0064093    -0.40   0.690     .9849552     1.01008
pyperstudb~k |   1.003254   .0071357     0.46   0.648     .9893658    1.017338
pyperstudl~o |   1.003015    .006849     0.44   0.659     .9896802    1.016529
pyperstudm~e |   1.001678   .0035623     0.47   0.637     .9947207    1.008685
       Asian |   .4948632   .3230068    -1.08   0.281     .1376859    1.778611
       Black |   1.244244   .1463748     1.86   0.063      .988027    1.566903
      Latino |   1.542904   .1785222     3.75   0.000     1.229845    1.935653
       Other |   .5760823   .2529302    -1.26   0.209     .2436478    1.362092
   AsianMale |   2.237602   1.892949     0.95   0.341     .4262752    11.74561
   BlackMale |   2.035232   .3374267     4.29   0.000     1.470588    2.816676
  LatinoMale |   1.120828       .162     0.79   0.430     .8443253    1.487881
   OtherMale |   2.412609   1.353571     1.57   0.116     .8033934    7.245119
-------------+----------------------------------------------------------------
3            |
      tenure |   .9950575    .004654    -1.06   0.289     .9859776    1.004221
       exper |   1.051236   .0074265     7.07   0.000     1.036781    1.065893
        male |   1.929469   .1783078     7.11   0.000     1.609815    2.312596
         age |   .9751233   .0065195    -3.77   0.000     .9624286    .9879854
pyacctrati~2 |   1.163608   .0993302     1.78   0.076     .9843393    1.375526
pyperstudlep |   1.004596   .0065534     0.70   0.482     .9918338    1.017523
pyperstude~s |    1.01809   .0030231     6.04   0.000     1.012182    1.024033
pyperstudw~e |   1.039159   .0116802     3.42   0.001     1.016516    1.062305
pyperstudb~k |   1.027209   .0125096     2.20   0.027     1.002981    1.052022
pyperstudl~o |   1.022878   .0120039     1.93   0.054     .9996194    1.046678
pyperstudm~e |   .9888999   .0052412    -2.11   0.035     .9786805     .999226
       Asian |   .6104833   .6406189    -0.47   0.638     .0780646    4.774123
       Black |   .5787686   .1363708    -2.32   0.020     .3647059    .9184743
      Latino |   1.165919    .219088     0.82   0.414     .8067128    1.685069
       Other |   .5847215   .4368786    -0.72   0.473     .1351973    2.528891
```

```
   AsianMale |   3.50e-06   .0016532    -0.03   0.979           0           .
   BlackMale |   3.248584   .9003917     4.25   0.000     1.886998     5.59264
  LatinoMale |    .851176   .1878591    -0.73   0.465      .552274     1.31185
   OtherMale |   2.568633   2.239263     1.08   0.279      .465209    14.18261
------------------------------------------------------------------------------
```

2005-06

```
. mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian Black Latino Other
AsianMale Black
> Male LatinoMale OtherMale if validcert2006a==1, rrr

Iteration 0:   log likelihood = -25141.264
Iteration 1:   log likelihood = -23974.392
Iteration 2:   log likelihood = -23953.485
Iteration 3:   log likelihood = -23953.448
Iteration 4:   log likelihood = -23953.448

Multinomial logistic regression                 Number of obs   =      23586
                                                LR chi2(38)     =    2375.63
                                                Prob > chi2     =     0.0000
Log likelihood = -23953.448                     Pseudo R2       =     0.0472

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.010812   .0024695     4.40   0.000     1.005984    1.015664
       exper |   1.005816   .0031169     1.87   0.061     .9997256    1.011944
        male |    1.20363   .0495188     4.51   0.000     1.110385    1.304706
         age |   .9727807   .0024992   -10.74   0.000     .9678947    .9776914
pyacctrati~2 |   1.018514   .0315998     0.59   0.554     .9584249     1.08237
pyperstudlep |   1.008658   .0013042     6.67   0.000     1.006105    1.011217
pyperstude~s |   .9911268   .0012686    -6.96   0.000     .9886434    .9936164
pyperstudw~e |   .9955861   .0034775    -1.27   0.205     .9887937    1.002425
pyperstudb~k |    1.00023    .003938     0.06   0.953      .992541    1.007978
pyperstudl~o |   .9992387   .0037207    -0.20   0.838     .9919729    1.006558
pyperstudm~e |   1.004767   .0020971     2.28   0.023     1.000665    1.008885
       Asian |   .9926128   .2558701    -0.03   0.977     .5989105    1.645121
       Black |    1.09941   .0675755     1.54   0.123     .9746312    1.240163
      Latino |   1.436886   .0809047     6.44   0.000     1.286752    1.604537
       Other |   .8163482   .1645088    -1.01   0.314     .5499751    1.211736
   AsianMale |   1.634154   .6945542     1.16   0.248     .7104151    3.759013
   BlackMale |   1.727229   .1707779     5.53   0.000     1.422945     2.09658
  LatinoMale |   1.165883   .0949038     1.89   0.059     .9939541    1.367551
   OtherMale |   1.825738   .5571165     1.97   0.049     1.003917    3.320314
-------------+----------------------------------------------------------------
3            |
      tenure |   1.013884   .0023554     5.94   0.000     1.009278    1.018511
       exper |   1.061667   .0036333    17.49   0.000     1.054569    1.068812
        male |   1.394464   .0592052     7.83   0.000     1.283121    1.515469
         age |   .9733836   .0029499    -8.90   0.000      .967619    .9791825
pyacctrati~2 |   1.467503   .0465671    12.09   0.000     1.379013     1.56167
pyperstudlep |   1.011297   .0014005     8.11   0.000     1.008555    1.014045
pyperstude~s |   1.020373   .0013854    14.85   0.000     1.017661    1.023092
pyperstudw~e |   1.008854   .0040777     2.18   0.029     1.000894    1.016878
pyperstudb~k |   .9935413    .004523    -1.42   0.155     .9847159    1.002446
pyperstudl~o |   .9883987   .0042428    -2.72   0.007     .9801178    .9967496
pyperstudm~e |   .9932116   .0024965    -2.71   0.007     .9883305    .9981168
       Asian |   .7436645   .2441642    -0.90   0.367     .3907561      1.4153
       Black |   .7678708   .0560458    -3.62   0.000     .6655184    .8859642
      Latino |   1.244533   .0779104     3.49   0.000     1.100828    1.406998
       Other |   .6022585   .1469929    -2.08   0.038     .3732765    .9717067
   AsianMale |    .724613   .4471825    -0.52   0.602     .2161731    2.428905
```

```
   BlackMale |    1.63735   .1908882     4.23   0.000     1.302882    2.057679
  LatinoMale |   .9657745   .0881495    -0.38   0.703     .8075765    1.154962
   OtherMale |   1.359033   .5198346     0.80   0.423     .6421593    2.876189
------------------------------------------------------------------------------

. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=23586)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     40.698    2    0.000
       exper |    341.525    2    0.000
        male |     64.930    2    0.000
         age |    153.406    2    0.000
pyacctrati~2 |    163.138    2    0.000
pyperstudlep |     80.445    2    0.000
pyperstude~s |    396.346    2    0.000
pyperstudw~e |      9.781    2    0.008
pyperstudb~k |      2.366    2    0.306
pyperstudl~o |      7.881    2    0.019
pyperstudm~e |     19.131    2    0.000
       Asian |      0.924    2    0.630
       Black |     21.530    2    0.000
      Latino |     42.900    2    0.000
       Other |      4.822    2    0.090
   AsianMale |      2.241    2    0.326
   BlackMale |     36.087    2    0.000
  LatinoMale |      5.136    2    0.077
   OtherMale |      3.962    2    0.138
---------------------------------------

**** Wald tests for independent variables (N=23586)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     40.652    2    0.000
       exper |    319.670    2    0.000
        male |     64.819    2    0.000
         age |    151.287    2    0.000
pyacctrati~2 |    164.507    2    0.000
pyperstudlep |     79.448    2    0.000
pyperstude~s |    384.153    2    0.000
pyperstudw~e |      9.616    2    0.008
pyperstudb~k |      2.393    2    0.302
pyperstudl~o |      8.071    2    0.018
pyperstudm~e |     18.739    2    0.000
       Asian |      0.873    2    0.646
       Black |     21.099    2    0.000
      Latino |     42.849    2    0.000
       Other |      4.563    2    0.102
   AsianMale |      2.215    2    0.330
   BlackMale |     35.471    2    0.000
  LatinoMale |      5.140    2    0.077
   OtherMale |      3.927    2    0.140
---------------------------------------

**** Hausman tests of IIA assumption (N=23586)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+----------------------------------
```

```
       2 |  -137.510   19     ---    ---
       3 |    -2.360   19     ---    ---
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=23586)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+--------------------------------------------------------
       2 |  -5112.949  -5102.385  21.129   20    0.390   for Ho
       3 |  -5846.536  -5830.470  32.131   20    0.042   against Ho
-------------------------------------------------------------------

**** Wald tests for combining alternatives (N=23586)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1491.442   19    0.000
       2-       1  |  511.435   19    0.000
       3-       1  | 1373.114   19    0.000
-------------------------------------------

**** LR tests for combining alternatives (N=23586)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1660.404   19    0.000
       2-       1  |  528.174   19    0.000
       3-       1  | 1523.578   19    0.000
-------------------------------------------

by region:


. bysort region: mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian
Black Latino Other
> AsianMale BlackMale LatinoMale OtherMale if validcert2006a==1, rrr iter(20)


---------->  region = 1

Iteration 0:   log likelihood = -1764.9169
Iteration 1:   log likelihood = -1671.7365
Iteration 2:   log likelihood = -1668.4124
Iteration 3:   log likelihood = -1668.1019
Iteration 4:   log likelihood = -1668.0524
Iteration 5:   log likelihood = -1668.0473
Iteration 6:   log likelihood = -1668.0462
Iteration 7:   log likelihood = -1668.0459
Iteration 8:   log likelihood = -1668.0459

Multinomial logistic regression                 Number of obs   =       1636
                                                LR chi2(38)     =     193.74
                                                Prob > chi2     =     0.0000
Log likelihood = -1668.0459                     Pseudo R2       =     0.0549

------------------------------------------------------------------------------
```

```
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |   .9858921   .0087293    -1.60   0.109     .9689306    1.003151
       exper |   1.002602   .0131739     0.20   0.843      .977111    1.028758
        male |   .7757454    .232492    -0.85   0.397     .4311346    1.395808
         age |   1.026722   .0114223     2.37   0.018     1.004577    1.049355
pyacctrati~2 |    1.22731   .1612265     1.56   0.119     .9487143    1.587717
pyperstudlep |   .9943531    .003124    -1.80   0.071      .988249    1.000495
pyperstude~s |    .990617   .0062946    -1.48   0.138     .9783563    1.003031
pyperstudw~e |   1.001752    .070964     0.02   0.980     .8718887    1.150957
pyperstudb~k |   1.025606   .0858408     0.30   0.763     .8704363    1.208437
pyperstudl~o |    1.00866   .0642803     0.14   0.892     .8902235    1.142853
pyperstudm~e |   1.010563   .0091998     1.15   0.248     .9926919    1.028756
       Asian |    3154634   3.98e+09     0.01   0.991            0           .
       Black |   816520.9   8.32e+08     0.01   0.989            0           .
      Latino |   .9980666   .2164476    -0.01   0.993     .6524723    1.526711
       Other |   .6233236   .4934443    -0.60   0.550      .132091    2.941398
   AsianMale |   7.36e-14   1.30e-10    -0.02   0.986            0           .
   BlackMale |   3.65e-06   .0037252    -0.01   0.990            0           .
  LatinoMale |   .8111706   .2660833    -0.64   0.523     .4264792     1.54286
   OtherMale |   2.144287   8644.046     0.00   1.000            0           .
-------------+----------------------------------------------------------------
2            |  (base outcome)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.010419   .0100008     1.05   0.295     .9910068    1.030212
       exper |   1.108954   .0205185     5.59   0.000     1.069459    1.149907
        male |    .650764   .2405404    -1.16   0.245     .3153522    1.342923
         age |   .9463435    .015616    -3.34   0.001     .9162263    .9774507
pyacctrati~2 |    1.43527   .2069065     2.51   0.012     1.081996    1.903889
pyperstudlep |   1.011524   .0035227     3.29   0.001     1.004643    1.018452
pyperstude~s |   .9938826   .0077985    -0.78   0.434     .9787147    1.009286
pyperstudw~e |   1.126419   .1117614     1.20   0.230     .9273534    1.368216
pyperstudb~k |   1.127813   .1459851     0.93   0.353     .8750981    1.453508
pyperstudl~o |   1.124969   .0993866     1.33   0.183     .9461074    1.337645
pyperstudm~e |   .9933083   .0120047    -0.56   0.579      .970056    1.017118
       Asian |   1.420843   2830.855     0.00   1.000            0           .
       Black |    2812961   2.87e+09     0.01   0.988            0           .
      Latino |   .7793739   .1914072    -1.01   0.310     .4816132    1.261227
       Other |   .3122481   .3634635    -1.00   0.317     .0318921    3.057149
   AsianMale |   5.91e-07   .0014924    -0.01   0.995            0           .
   BlackMale |   1.33e-12   1.67e-09    -0.02   0.983            0           .
  LatinoMale |   1.302238   .5210997     0.66   0.509     .5943966    2.853019
   OtherMale |   1.42e+08   4.04e+11     0.01   0.995            0           .
------------------------------------------------------------------------------


---------->  region = 2

Iteration 0:   log likelihood = -757.15308
Iteration 1:   log likelihood = -711.24781
Iteration 2:   log likelihood = -709.23815
Iteration 3:   log likelihood = -709.01948
Iteration 4:   log likelihood = -708.98197
Iteration 5:   log likelihood = -708.97361
Iteration 6:   log likelihood = -708.97158
Iteration 7:   log likelihood = -708.97115
Iteration 8:   log likelihood = -708.97107
Iteration 9:   log likelihood = -708.97104

Multinomial logistic regression                 Number of obs   =        740
                                                LR chi2(38)     =      96.36
                                                Prob > chi2     =     0.0000
Log likelihood = -708.97104                     Pseudo R2       =     0.0636

------------------------------------------------------------------------------
```

```
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.023812   .0162371     1.48   0.138     .9924774    1.056136
       exper |   .9732148   .0186146    -1.42   0.156     .9374063    1.010391
        male |   1.854362   .5346771     2.14   0.032     1.053813    3.263064
         age |   .9776105   .0149243    -1.48   0.138     .9487926    1.007304
pyacctrati~2 |   .8405803   .1788219    -0.82   0.414     .5539847    1.275442
pyperstudlep |   .9716545   .0154774    -1.81   0.071      .941788    1.002468
pyperstude~s |   1.009692   .0080601     1.21   0.227     .9940171    1.025613
pyperstudw~e |   .9281179   .0710056    -0.98   0.330     .7988809    1.078262
pyperstudb~k |   .9041989   .0797339    -1.14   0.253     .7606826    1.074792
pyperstudl~o |   .9268006   .0690318    -1.02   0.307     .8009132    1.072475
pyperstudm~e |   1.013854   .0116372     1.20   0.231     .9913004    1.036921
       Asian |   1.04e-06   .0021051    -0.01   0.995            0           .
       Black |   3.635262   3.150671     1.49   0.136     .6649696    19.87328
      Latino |   1.681316   .4455926     1.96   0.050     1.000135    2.826441
       Other |   1.34e-06   .0011684    -0.02   0.988            0           .
   AsianMale |   1.011122   2472.652     0.00   1.000            0           .
   BlackMale |   .8217178   1.057903    -0.15   0.879     .0658963     10.2467
  LatinoMale |   .4967531   .1998367    -1.74   0.082     .2257951    1.092866
   OtherMale |    1432487   1.25e+09     0.02   0.987            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9943856   .0125058    -0.45   0.654     .9701743    1.019201
       exper |   1.035864   .0177506     2.06   0.040     1.001652    1.071246
        male |   .9346844   .2704769    -0.23   0.815     .5300859    1.648101
         age |   1.001058   .0153903     0.07   0.945     .9713439    1.031682
pyacctrati~2 |   1.583503   .3086162     2.36   0.018     1.080748    2.320137
pyperstudlep |   1.010195   .0136718     0.75   0.454     .9837515     1.03735
pyperstude~s |   1.026633   .0082874     3.26   0.001     1.010518    1.043005
pyperstudw~e |   1.078368    .084509     0.96   0.336     .9248265      1.2574
pyperstudb~k |   1.061873    .094922     0.67   0.502     .8912153    1.265209
pyperstudl~o |   1.057187   .0807902     0.73   0.467     .9101294    1.228007
pyperstudm~e |   .9615469   .0144176    -2.62   0.009        .9337    .9902243
       Asian |   1.62e-06   .0031249    -0.01   0.994            0           .
       Black |   4.220299   3.377135     1.80   0.072     .8794299    20.25281
      Latino |    .874483   .2234883    -0.52   0.600     .5299233    1.443078
       Other |   .9002692   1.071871    -0.09   0.930     .0872815    9.285873
   AsianMale |   .4082813   962.3273    -0.00   1.000            0           .
   BlackMale |   .4672612   .7017137    -0.51   0.612     .0246184    8.868689
  LatinoMale |   1.998867   .7925448     1.75   0.081     .9189356    4.347932
   OtherMale |   1.71e-06   .0021979    -0.01   0.992            0           .
------------------------------------------------------------------------------


---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -317.95378
Iteration 1:   log likelihood = -285.41561
Iteration 2:   log likelihood = -284.39815
Iteration 3:   log likelihood = -284.34119
Iteration 4:   log likelihood = -284.33247
Iteration 5:   log likelihood = -284.33036
Iteration 6:   log likelihood = -284.32992
Iteration 7:   log likelihood = -284.32982
Iteration 8:   log likelihood =  -284.3298

Multinomial logistic regression                 Number of obs   =        295
                                                LR chi2(32)     =      67.25
                                                Prob > chi2     =     0.0003
Log likelihood =  -284.3298                     Pseudo R2       =     0.1058
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.056928   .0265554     2.20   0.028     1.006142    1.110279
       exper |   .9309113   .0263131    -2.53   0.011     .8807412    .9839392
        male |   2.162798   .8478747     1.97   0.049     1.003049    4.663476
         age |   .9752893   .0239909    -1.02   0.309     .9293835    1.023463
pyacctrati~2 |   1.345934     .54132     0.74   0.460     .6118989    2.960518
pyperstudlep |   1.024309   .0352019     0.70   0.485     .9575872    1.095681
pyperstude~s |   .9867275   .0180506    -0.73   0.465     .9519758    1.022748
pyperstudw~e |   .9737622   .0831459    -0.31   0.756     .8237056    1.151155
pyperstudb~k |   .9975445   .0868004    -0.03   0.977     .8411351    1.183038
pyperstudl~o |   .9968214   .0883738    -0.04   0.971     .8378255     1.18599
pyperstudm~e |   1.028596    .026873     1.08   0.281     .9772516    1.082638
       Asian |  (omitted)
       Black |   2.932709   2.488871     1.27   0.205     .5557622    15.47565
      Latino |   1.835111   1.077161     1.03   0.301      .580804    5.798223
       Other |   616152.4   2.52e+08     0.03   0.974            0           .
   AsianMale |  (omitted)
   BlackMale |   1.396752   2.081846     0.22   0.823     .0752335    25.93149
  LatinoMale |   .5055377   .4568892    -0.75   0.450     .0859932     2.97196
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.020737   .0198787     1.05   0.292       .98251    1.060452
       exper |   1.040744   .0300495     1.38   0.167     .9834837    1.101339
        male |    .997783   .3465082    -0.01   0.995     .5051641    1.970787
         age |   .9386475   .0263623    -2.25   0.024     .8883748    .9917652
pyacctrati~2 |   1.603425    .517964     1.46   0.144     .8512947    3.020073
pyperstudlep |   1.002242   .0327316     0.07   0.945     .9400991    1.068492
pyperstude~s |   1.037064   .0169334     2.23   0.026       1.0044     1.07079
pyperstudw~e |   .9748495   .0700748    -0.35   0.723     .8467417    1.122339
pyperstudb~k |   .9433177    .069304    -0.79   0.427     .8168111    1.089417
pyperstudl~o |   .9410785   .0708398    -0.81   0.420     .8119916    1.090687
pyperstudm~e |   1.000583   .0274128     0.02   0.983     .9482718     1.05578
       Asian |  (omitted)
       Black |   2.397136   1.832702     1.14   0.253     .5356939    10.72676
      Latino |   .9000852   .5617151    -0.17   0.866     .2648959    3.058384
       Other |    1136289   4.64e+08     0.03   0.973            0           .
   AsianMale |  (omitted)
   BlackMale |   1.838506   2.701209     0.41   0.679     .1032391    32.74053
  LatinoMale |   2.609888   2.298495     1.09   0.276     .4644934    14.66439
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 4

Iteration 0:   log likelihood = -5278.0189
Iteration 1:   log likelihood = -4982.3946
Iteration 2:   log likelihood = -4968.9374
Iteration 3:   log likelihood = -4968.6946
Iteration 4:   log likelihood = -4968.6384
Iteration 5:   log likelihood =  -4968.627
Iteration 6:   log likelihood = -4968.6245
Iteration 7:   log likelihood =  -4968.624
Iteration 8:   log likelihood = -4968.6239
Iteration 9:   log likelihood = -4968.6238

Multinomial logistic regression                 Number of obs   =       5145
                                                LR chi2(38)     =     618.79
                                                Prob > chi2     =     0.0000
Log likelihood = -4968.6238                     Pseudo R2       =     0.0586
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.014506    .005382     2.71   0.007     1.004012     1.02511
       exper |   1.033843   .0071608     4.81   0.000     1.019903    1.047974
        male |   1.098118   .0990299     1.04   0.299     .9202087    1.310423
         age |   .9613185   .0054352    -6.98   0.000     .9507244    .9720306
pyacctrati~2 |   1.080435   .0664564     1.26   0.208      .957728    1.218864
pyperstudlep |   1.003574   .0029593     1.21   0.226     .9977905    1.009391
pyperstude~s |   .9921012    .003447    -2.28   0.022     .9853682    .9988803
pyperstudw~e |   1.006653   .0053494     1.25   0.212     .9962224    1.017192
pyperstudb~k |   1.008519   .0066527     1.29   0.198     .9955639    1.021643
pyperstudl~o |   1.008079   .0064184     1.26   0.206     .9955772    1.020738
pyperstudm~e |   1.008499   .0056253     1.52   0.129     .9975339    1.019585
       Asian |   .9845184   .3751562    -0.04   0.967     .4665184    2.077681
       Black |   .9106645   .0945742    -0.90   0.368     .7429499    1.116239
      Latino |   1.451571   .1902825     2.84   0.004     1.122681    1.876808
       Other |   .9053109   .3409525    -0.26   0.792     .4327366    1.893965
   AsianMale |   1.245036   .9414269     0.29   0.772     .2828464    5.480411
   BlackMale |   2.076159   .3450491     4.40   0.000     1.498975    2.875589
  LatinoMale |    1.17748   .2508764     0.77   0.443      .775523    1.787773
   OtherMale |   1.664586   1.204588     0.70   0.481      .403022     6.87517
-------------+----------------------------------------------------------------
3            |
      tenure |   1.035655     .00612     5.93   0.000     1.023729    1.047719
       exper |   1.074837   .0093724     8.28   0.000     1.056624    1.093365
        male |   1.131526   .1242782     1.13   0.261     .9123789    1.403312
         age |   .9692695   .0072236    -4.19   0.000     .9552144    .9835314
pyacctrati~2 |   1.349118   .0985684     4.10   0.000     1.169122    1.556825
pyperstudlep |   1.020467   .0036473     5.67   0.000     1.013343    1.027641
pyperstude~s |   1.020777   .0045177     4.65   0.000     1.011961     1.02967
pyperstudw~e |   1.012948   .0067634     1.93   0.054     .9997784    1.026291
pyperstudb~k |   .9987922   .0084689    -0.14   0.887     .9823306     1.01553
pyperstudl~o |   .9821836   .0079091    -2.23   0.026     .9668038    .9978081
pyperstudm~e |   1.000721   .0071979     0.10   0.920     .9867121    1.014928
       Asian |   .6563255   .3464199    -0.80   0.425     .2332601    1.846707
       Black |   .4537383   .0633872    -5.66   0.000     .3450584    .5966481
      Latino |   1.285303   .2024928     1.59   0.111       .94385    1.750281
       Other |   .6769319   .3497434    -0.76   0.450     .2459028    1.863487
   AsianMale |   2.57e-06   .0011832    -0.03   0.978            0           .
   BlackMale |    2.31862   .5067696     3.85   0.000     1.510729    3.558546
  LatinoMale |   1.177836   .3165913     0.61   0.543     .6954881     1.99471
   OtherMale |   3.284904   2.939986     1.33   0.184     .5684576    18.98223
------------------------------------------------------------------------------


--------->  region = 5

note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -550.04507
Iteration 1:   log likelihood = -504.91476
Iteration 2:   log likelihood = -503.06156
Iteration 3:   log likelihood = -502.88644
Iteration 4:   log likelihood = -502.85725
Iteration 5:   log likelihood = -502.85067
Iteration 6:   log likelihood = -502.84906
Iteration 7:   log likelihood = -502.84874
Iteration 8:   log likelihood = -502.84867
Iteration 9:   log likelihood = -502.84865

Multinomial logistic regression                 Number of obs   =        545
                                                LR chi2(36)     =      94.39
                                                Prob > chi2     =     0.0000
```

```
Log likelihood = -502.84865                     Pseudo R2       =     0.0858

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.015704   .0167544     0.94   0.345     .9833915    1.049079
       exper |    .997286   .0230214    -0.12   0.906     .9531704    1.043443
        male |   2.721976     .77028     3.54   0.000     1.563171    4.739822
         age |    .977071   .0190439    -1.19   0.234     .9404495    1.015118
pyacctrati~2 |    .877097   .2214039    -0.52   0.603     .5347865    1.438516
pyperstudlep |   .9418584   .0350608    -1.61   0.108     .8755875    1.013145
pyperstude~s |   1.014236   .0101826     1.41   0.159     .9944737    1.034391
pyperstudw~e |   .9524691   .0451664    -1.03   0.304     .8679339    1.045238
pyperstudb~k |   .9452494   .0466363    -1.14   0.254     .8581244     1.04122
pyperstudl~o |   .9588572   .0559736    -0.72   0.472     .8551943    1.075086
pyperstudm~e |   .9826433   .0224047    -0.77   0.443     .9396977    1.027552
       Asian |   7.61e-07   .0008735    -0.01   0.990            0           .
       Black |   1.760257    .695307     1.43   0.152      .811613    3.817714
      Latino |    .957505   1.129783    -0.04   0.971     .0947955    9.671509
       Other |   9.27e-07   .0018418    -0.01   0.994            0           .
   AsianMale |    1230498   1.41e+09     0.01   0.990            0           .
   BlackMale |   1.251659   .6762638     0.42   0.678     .4340971    3.608985
  LatinoMale |   3.401123   5.826169     0.71   0.475     .1184412    97.66565
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.014277   .0147611     0.97   0.330      .985755    1.043625
       exper |   1.058481   .0258562     2.33   0.020     1.008998    1.110391
        male |    2.17547   .6121416     2.76   0.006     1.253253    3.776306
         age |   .9773051   .0210424    -1.07   0.286     .9369209     1.01943
pyacctrati~2 |   1.840545   .4312322     2.60   0.009     1.162823    2.913262
pyperstudlep |   .9887629   .0311636    -0.36   0.720     .9295317    1.051768
pyperstude~s |   1.022003    .010198     2.18   0.029     1.002209    1.042188
pyperstudw~e |   1.016272   .0437444     0.37   0.708     .9340517     1.10573
pyperstudb~k |   .9955734   .0447404    -0.10   0.921     .9116347    1.087241
pyperstudl~o |   1.004642   .0579065     0.08   0.936     .8973237    1.124796
pyperstudm~e |   .9829428    .026697    -0.63   0.526      .931986    1.036686
       Asian |   2.35e-06   .0025234    -0.01   0.990            0           .
       Black |   2.097845   .8938672     1.74   0.082      .910094    4.835712
      Latino |   1.161452   1.432495     0.12   0.903      .103552    13.02699
       Other |   2.84e-06   .0056218    -0.01   0.995            0           .
   AsianMale |   .5990122   986.2855    -0.00   1.000            0           .
   BlackMale |   2.007736   1.159898     1.21   0.228     .6470759    6.229566
  LatinoMale |   2.126373   4.076974     0.39   0.694     .0496134    91.13391
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 6

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -867.18625
Iteration 1:   log likelihood = -807.36623
Iteration 2:   log likelihood = -805.10611
Iteration 3:   log likelihood = -804.97476
Iteration 4:   log likelihood = -804.94605
Iteration 5:   log likelihood = -804.94002
Iteration 6:   log likelihood = -804.93905
Iteration 7:   log likelihood = -804.93881
Iteration 8:   log likelihood = -804.93876
Iteration 9:   log likelihood = -804.93875

Multinomial logistic regression                 Number of obs   =        810
                                                LR chi2(36)     =     124.50
```

```
                                                Prob > chi2     =     0.0000
Log likelihood = -804.93875                     Pseudo R2       =     0.0718

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9921973   .0137937    -0.56   0.573     .9655271    1.019604
       exper |   1.027842   .0164911     1.71   0.087     .9960235    1.060678
        male |    1.54659   .2982561     2.26   0.024     1.059798    2.256978
         age |    .959602   .0129545    -3.05   0.002     .9345445    .9853313
pyacctrati~2 |   1.230747   .1950384     1.31   0.190     .9021471    1.679036
pyperstudlep |    1.00834   .0170014     0.49   0.622     .9755623    1.042219
pyperstude~s |   1.002158   .0072423     0.30   0.766     .9880629    1.016453
pyperstudw~e |   1.013078   .0335158     0.39   0.695     .9494727    1.080944
pyperstudb~k |   .9983585   .0349107    -0.05   0.963     .9322268    1.069182
pyperstudl~o |   1.007516   .0337997     0.22   0.823     .9434007    1.075988
pyperstudm~e |   .9809187   .0173568    -1.09   0.276     .9474832    1.015534
       Asian |   2.853467   4.121834     0.73   0.468     .1681946    48.40985
       Black |   1.475392   .6839446     0.84   0.401     .5947271    3.660136
      Latino |   .9158245   .5385192    -0.15   0.881     .2892627     2.89956
       Other |   9.78e-07   .0013267    -0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |   1.789996   1.401307     0.74   0.457     .3859088    8.302702
  LatinoMale |   1.024106   .8227876     0.03   0.976     .2120665    4.945584
   OtherMale |    1408147   1.91e+09     0.01   0.992            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9938958    .013262    -0.46   0.646     .9682397    1.020232
       exper |    1.11225   .0221559     5.34   0.000     1.069662    1.156534
        male |   2.256615   .4648752     3.95   0.000     1.506972    3.379167
         age |   .9251617   .0164894    -4.36   0.000     .8934011    .9580514
pyacctrati~2 |   1.642682   .2774768     2.94   0.003     1.179699    2.287367
pyperstudlep |   1.044209   .0183603     2.46   0.014     1.008837    1.080822
pyperstude~s |   1.028336   .0079879     3.60   0.000     1.012798    1.044112
pyperstudw~e |     1.0194   .0355416     0.55   0.582     .9520662    1.091495
pyperstudb~k |   1.010384   .0364638     0.29   0.775     .9413856     1.08444
pyperstudl~o |   .9885049   .0348327    -0.33   0.743     .9225382    1.059188
pyperstudm~e |   .9591923   .0202427    -1.97   0.048     .9203266    .9996993
       Asian |   2.64e-06   .0029679    -0.01   0.991            0           .
       Black |   1.871291   .8853781     1.32   0.185     .7402969     4.73017
      Latino |   .8363183   .5631054    -0.27   0.791     .2234833    3.129667
       Other |   1.27e-06    .001815    -0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |   .7736286   .6566471    -0.30   0.762     .1465691    4.083406
  LatinoMale |   .2071909   .2634493    -1.24   0.216     .0171413     2.50437
   OtherMale |   .6281561   1128.364    -0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 7

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1049.3548
Iteration 1:   log likelihood = -988.66374
Iteration 2:   log likelihood =  -986.9767
Iteration 3:   log likelihood = -986.84966
Iteration 4:   log likelihood = -986.82295
Iteration 5:   log likelihood = -986.81708
Iteration 6:   log likelihood = -986.81612
Iteration 7:   log likelihood = -986.81601
Iteration 8:   log likelihood = -986.81599

Multinomial logistic regression                 Number of obs   =       1019
```

```
                                                LR chi2(34)     =     125.08
                                                Prob > chi2     =     0.0000
Log likelihood = -986.81599                     Pseudo R2       =     0.0596

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9807014   .0125703    -1.52   0.128      .956371    1.005651
       exper |   1.000672   .0160512     0.04   0.967     .9697013    1.032631
        male |    .997944   .1969489    -0.01   0.992      .677825    1.469247
         age |   .9777452   .0137822    -1.60   0.110     .9511023    1.005134
pyacctrati~2 |   1.053827   .2195712     0.25   0.801     .7005134     1.58534
pyperstudlep |   .9795446   .0167605    -1.21   0.227     .9472393    1.012952
pyperstude~s |    .985449   .0081817    -1.77   0.077      .969543    1.001616
pyperstudw~e |   .9010708   .0668205    -1.40   0.160     .7791777    1.042032
pyperstudb~k |   .9147414   .0692732    -1.18   0.239      .788564    1.061108
pyperstudl~o |   .9227361    .069496    -1.07   0.286     .7961027    1.069513
pyperstudm~e |   .9963929   .0127703    -0.28   0.778     .9716752    1.021739
       Asian |  (omitted)
       Black |   1.226205   .4364836     0.57   0.567     .6103334    2.463538
      Latino |   .8490034   1.014351    -0.14   0.891     .0816456    8.828486
       Other |   2.26e-06   .0015177    -0.02   0.985            0           .
   AsianMale |  (omitted)
   BlackMale |   1.954435   .9905112     1.32   0.186     .7238203    5.277299
  LatinoMale |   4.020175   6.124526     0.91   0.361     .2029945    79.61699
   OtherMale |   .6419089    793.762    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9918432   .0099105    -0.82   0.412     .9726079    1.011459
       exper |   1.036683   .0143541     2.60   0.009     1.008928    1.065202
        male |   1.651298   .2800853     2.96   0.003     1.184264    2.302513
         age |   .9885347   .0124717    -0.91   0.361     .9643905    1.013283
pyacctrati~2 |   1.427796   .2289578     2.22   0.026     1.042724    1.955072
pyperstudlep |    1.01883    .015025     1.26   0.206     .9898032    1.048708
pyperstude~s |   1.031871   .0070929     4.56   0.000     1.018062    1.045867
pyperstudw~e |   1.010344   .0842226     0.12   0.902     .8580503    1.189668
pyperstudb~k |   1.002297   .0847007     0.03   0.978     .8493065    1.182847
pyperstudl~o |   .9768722   .0825856    -0.28   0.782     .8277067     1.15292
pyperstudm~e |   .9883898   .0108778    -1.06   0.289      .967298    1.009942
       Asian |  (omitted)
       Black |   1.209792   .3981872     0.58   0.563     .6346709     2.30607
      Latino |   .7578727   .8882621    -0.24   0.813     .0761989    7.537792
       Other |   1.231296    1.53778     0.17   0.868     .1064848    14.23763
   AsianMale |  (omitted)
   BlackMale |   1.254381   .5997157     0.47   0.635     .4914426    3.201742
  LatinoMale |   6.481011   9.325173     1.30   0.194     .3862739    108.7402
   OtherMale |   9.11e-07   .0007111    -0.02   0.986            0           .
------------------------------------------------------------------------------


---------->  region = 8

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -395.49344
Iteration 1:   log likelihood = -352.99466
Iteration 2:   log likelihood = -351.80287
Iteration 3:   log likelihood = -351.74569
Iteration 4:   log likelihood = -351.73254
Iteration 5:   log likelihood = -351.72963
Iteration 6:   log likelihood = -351.72898
Iteration 7:   log likelihood = -351.72888
Iteration 8:   log likelihood = -351.72887

Multinomial logistic regression                 Number of obs   =        384
```

```
                                                LR chi2(36)     =      87.53
                                                Prob > chi2     =     0.0000
Log likelihood = -351.72887                     Pseudo R2       =     0.1107

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.012316   .0237477     0.52   0.602      .966825    1.059947
       exper |   1.009131   .0317852     0.29   0.773     .9487169    1.073392
        male |   2.328044   .7836889     2.51   0.012     1.203514    4.503301
         age |   .9456281   .0275338    -1.92   0.055     .8931737    1.001163
pyacctrati~2 |   1.335731   .4617875     0.84   0.402     .6783326    2.630241
pyperstudlep |   .9369333   .0465543    -1.31   0.190     .8499908    1.032769
pyperstude~s |   .9964937   .0138308    -0.25   0.800     .9697512    1.023974
pyperstudw~e |   .7485874   .1235758    -1.75   0.079     .5416607    1.034565
pyperstudb~k |    .768707   .1275889    -1.58   0.113     .5552385    1.064246
pyperstudl~o |   .7825034   .1305409    -1.47   0.142     .5642672    1.085145
pyperstudm~e |   1.028555   .0273711     1.06   0.290     .9762833    1.083625
       Asian |    2.49865   5812.765     0.00   1.000            0           .
       Black |   2.175178     1.2446     1.36   0.174     .7086825    6.676332
      Latino |   9.735677   14.86243     1.49   0.136     .4885699    194.0017
       Other |   4.753586   7.085471     1.05   0.296      .256012    88.26375
   AsianMale |  (omitted)
   BlackMale |   .8770759   .9942102    -0.12   0.908     .0950948    8.089422
  LatinoMale |   .1276672   297.0003    -0.00   0.999            0           .
   OtherMale |    1781763   4.64e+09     0.01   0.996            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.007666     .01822     0.42   0.673      .972581    1.044017
       exper |   1.013072   .0248675     0.53   0.597     .9654861    1.063002
        male |   2.540957   .7086688     3.34   0.001     1.470952    4.389308
         age |   1.010341   .0236099     0.44   0.660     .9651097    1.057691
pyacctrati~2 |   2.001145   .5551383     2.50   0.012      1.16184    3.446757
pyperstudlep |   1.012942    .033075     0.39   0.694     .9501472    1.079887
pyperstude~s |   1.045137   .0122146     3.78   0.000     1.021469    1.069353
pyperstudw~e |    .918615   .1293897    -0.60   0.547     .6970103    1.210676
pyperstudb~k |    .893035   .1259131    -0.80   0.422     .6774133     1.17729
pyperstudl~o |   .8858369   .1251301    -0.86   0.391     .6716084      1.1684
pyperstudm~e |   1.033033   .0260089     1.29   0.197     .9832939    1.085288
       Asian |   563616.4   6.93e+08     0.01   0.991            0           .
       Black |   1.599084   .9024613     0.83   0.406      .529037    4.833443
      Latino |   4.881176   6.216002     1.24   0.213     .4022998    59.22419
       Other |   3.314434   4.771037     0.83   0.405     .1973006    55.67888
   AsianMale |  (omitted)
   BlackMale |   1.150944   1.228314     0.13   0.895     .1421124    9.321298
  LatinoMale |   408196.1   5.02e+08     0.01   0.992            0           .
   OtherMale |    .136508   564.6848    -0.00   1.000            0           .
------------------------------------------------------------------------------


---------> region = 9

note: AsianMale omitted because of collinearity
note: LatinoMale omitted because of collinearity
Iteration 0:   log likelihood = -225.13938
Iteration 1:   log likelihood =  -201.5717
Iteration 2:   log likelihood = -200.67438
Iteration 3:   log likelihood = -199.57327
Iteration 4:   log likelihood = -199.50216
Iteration 5:   log likelihood = -199.48874
Iteration 6:   log likelihood = -199.48587
Iteration 7:   log likelihood = -199.48517
Iteration 8:   log likelihood = -199.48502
Iteration 9:   log likelihood = -199.48499
```

```
Iteration 10:  log likelihood = -199.48498

Multinomial logistic regression                 Number of obs   =        213
                                                LR chi2(34)     =      51.31
                                                Prob > chi2     =     0.0288
Log likelihood = -199.48498                     Pseudo R2       =     0.1139

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |   .9754088   .0230774    -1.05   0.293     .9312106    1.021705
       exper |   .9776568   .0335122    -0.66   0.510      .914132    1.045596
        male |   .7430556   .2677474    -0.82   0.410     .3666953    1.505696
         age |   1.018765   .0293662     0.64   0.519     .9628037    1.077978
pyacctrati~2 |   .6949108   .2354976    -1.07   0.283     .3576566    1.350181
pyperstudlep |   1.010102   .0621301     0.16   0.870     .8953831    1.139519
pyperstude~s |   .9885005    .015295    -0.75   0.455     .9589729    1.018937
pyperstudw~e |   .8047641   .0906686    -1.93   0.054     .6453095     1.00362
pyperstudb~k |   .8162259   .0990438    -1.67   0.094     .6434613    1.035376
pyperstudl~o |    .803749    .091278    -1.92   0.054     .6433592    1.004124
pyperstudm~e |    .949732   .0318031    -1.54   0.124     .8894007    1.014156
       Asian |   .8441708   7829.185    -0.00   1.000            0           .
       Black |   5.34e-07   .0008773    -0.01   0.993            0           .
      Latino |   2.87e-07   .0005017    -0.01   0.993            0           .
       Other |    5488774   1.48e+10     0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   1.57e+13   4.63e+16     0.01   0.992            0           .
  LatinoMale |  (omitted)
   OtherMale |   3.94e-14   1.16e-10    -0.01   0.992            0           .
-------------+----------------------------------------------------------------
2            |
      tenure |   .9736838   .0300384    -0.86   0.387     .9165542    1.034374
       exper |   1.006333   .0447023     0.14   0.887     .9224242    1.097875
        male |   .7198203   .3221954    -0.73   0.463     .2993793    1.730719
         age |   .9731462   .0351716    -0.75   0.451      .906596    1.044582
pyacctrati~2 |   .7910482   .3390128    -0.55   0.584     .3415158    1.832294
pyperstudlep |   1.026319   .0853401     0.31   0.755     .8719739    1.207984
pyperstude~s |   .9634793   .0200967    -1.78   0.074     .9248849    1.003684
pyperstudw~e |   .6980313   .0903029    -2.78   0.005     .5416974    .8994832
pyperstudb~k |    .732788   .1014122    -2.25   0.025        .5587     .961121
pyperstudl~o |   .7122188   .0931984    -2.59   0.010     .5510973    .9204466
pyperstudm~e |   .9943063   .0260803    -0.22   0.828     .9444816    1.046759
       Asian |   1.14e+08   7.19e+11     0.00   0.998            0           .
       Black |   1.325321   2.254314     0.17   0.868     .0472567    37.16879
      Latino |   3.83e-07   .0009253    -0.01   0.995            0           .
       Other |   1.427772   6736.381     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   3.11e+07   7.64e+10     0.01   0.994            0           .
  LatinoMale |  (omitted)
   OtherMale |   .4068755   1919.682    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |  (base outcome)
------------------------------------------------------------------------------


---------->  region = 10

Iteration 0:   log likelihood = -3730.9129
Iteration 1:   log likelihood =  -3496.027
Iteration 2:   log likelihood =  -3490.285
Iteration 3:   log likelihood = -3490.2574
Iteration 4:   log likelihood = -3490.2574

Multinomial logistic regression                 Number of obs   =       3487
                                                LR chi2(38)     =     481.31
                                                Prob > chi2     =     0.0000
```

```
Log likelihood = -3490.2574                     Pseudo R2       =     0.0645

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.018496   .0065414     2.85   0.004     1.005755    1.031398
       exper |   1.015213   .0084043     1.82   0.068     .9988738     1.03182
        male |    1.31738   .1397471     2.60   0.009     1.070079    1.621833
         age |   .9653802   .0065762    -5.17   0.000     .9525766    .9783558
pyacctrati~2 |   .9314429   .0719418    -0.92   0.358     .8005935    1.083678
pyperstudlep |   1.005031   .0047597     1.06   0.289     .9957454    1.014403
pyperstude~s |   .9916135   .0035031    -2.38   0.017     .9847713    .9985032
pyperstudw~e |   .9821913   .0079105    -2.23   0.026     .9668088    .9978186
pyperstudb~k |   .9846574   .0085825    -1.77   0.076     .9679789    1.001623
pyperstudl~o |   .9843367   .0082846    -1.88   0.061     .9682325    1.000709
pyperstudm~e |   1.007012    .005914     1.19   0.234      .995487     1.01867
       Asian |   3.589716   2.515345     1.82   0.068     .9091086    14.17439
       Black |   1.096027   .1467468     0.68   0.493     .8430512    1.424913
      Latino |   2.180856   .4075376     4.17   0.000     1.512037    3.145513
       Other |   .6758058      .2869    -0.92   0.356      .294077     1.55304
   AsianMale |   .3713593   .3549509    -1.04   0.300     .0570431    2.417607
   BlackMale |   1.572451    .337789     2.11   0.035     1.032107    2.395684
  LatinoMale |   1.141022   .3302721     0.46   0.649       .64701    2.012226
   OtherMale |   2.354131   1.398982     1.44   0.150     .7344963    7.545214
-------------+----------------------------------------------------------------
3            |
      tenure |   1.018062   .0063956     2.85   0.004     1.005604    1.030675
       exper |   1.077806   .0103452     7.81   0.000     1.057719    1.098274
        male |   1.186719   .1390299     1.46   0.144     .9432469    1.493036
         age |   .9664705   .0081706    -4.03   0.000     .9505885    .9826179
pyacctrati~2 |   1.613132    .129287     5.97   0.000     1.378634    1.887517
pyperstudlep |   1.020248   .0056211     3.64   0.000      1.00929    1.031325
pyperstude~s |   1.014871   .0039511     3.79   0.000     1.007157    1.022645
pyperstudw~e |   .9947287   .0086707    -0.61   0.544     .9778788    1.011869
pyperstudb~k |   .9829172    .009527    -1.78   0.075     .9644209    1.001768
pyperstudl~o |   .9667472   .0088518    -3.69   0.000     .9495528     .984253
pyperstudm~e |   1.004913     .00708     0.70   0.487     .9911318    1.018886
       Asian |   3.022022   2.389137     1.40   0.162     .6417394    14.23104
       Black |   .8548918   .1381565    -0.97   0.332     .6228035    1.173468
      Latino |   2.774754   .5647973     5.01   0.000     1.861931    4.135094
       Other |   .3030915   .1748039    -2.07   0.038     .0978712    .9386259
   AsianMale |   .1887571   .2618094    -1.20   0.229     .0124529    2.861111
   BlackMale |   2.375808   .5960594     3.45   0.001     1.452968    3.884783
  LatinoMale |   1.153419   .3751111     0.44   0.661     .6097644    2.181785
   OtherMale |   1.649068   1.469959     0.56   0.575     .2874006    9.462137
------------------------------------------------------------------------------


---------->  region = 11

Iteration 0:   log likelihood = -2643.7246
Iteration 1:   log likelihood = -2489.1754
Iteration 2:   log likelihood = -2485.0419
Iteration 3:   log likelihood = -2485.0259
Iteration 4:   log likelihood = -2485.0259

Multinomial logistic regression                 Number of obs   =       2454
                                                LR chi2(38)     =     317.40
                                                Prob > chi2     =     0.0000
Log likelihood = -2485.0259                     Pseudo R2       =     0.0600

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
```

```
1             |  (base outcome)
--------------+----------------------------------------------------------------
2             |
      tenure  |   1.001845    .007955     0.23   0.816     .9863738    1.017558
       exper  |   1.001647   .0094207     0.18   0.861     .9833524    1.020283
        male  |    1.32343   .1500457     2.47   0.013     1.059729     1.65275
         age  |   .9824116   .0074032    -2.35   0.019     .9680082    .9970293
pyacctrati~2  |    1.15003   .1052017     1.53   0.126     .9612657    1.375862
pyperstudlep  |   1.008896   .0065471     1.36   0.172     .9961451     1.02181
pyperstude~s  |    .998658   .0040938    -0.33   0.743     .9906665    1.006714
pyperstudw~e  |   .9979416   .0122394    -0.17   0.867     .9742389    1.022221
pyperstudb~k  |   1.000176   .0138002     0.01   0.990     .9734906    1.027593
pyperstudl~o  |   1.000313   .0132491     0.02   0.981      .974679     1.02662
pyperstudm~e  |   .9977313   .0059103    -0.38   0.701     .9862144    1.009383
       Asian  |   .3505556   .3954745    -0.93   0.353     .0384137    3.199102
       Black  |   1.722144   .3540803     2.64   0.008     1.150956    2.576797
      Latino  |    1.74261   .4593758     2.11   0.035      1.03947    2.921384
       Other  |   .5115579   .2994538    -1.15   0.252     .1624133    1.611268
   AsianMale  |   5.974264    9.99438     1.07   0.285     .2250633    158.5858
   BlackMale  |    1.21657   .4236836     0.56   0.574     .6147475     2.40756
  LatinoMale  |    .762331   .2835036    -0.73   0.466     .3677815    1.580146
   OtherMale  |   .5874246    .581979    -0.54   0.591     .0842639    4.095084
--------------+----------------------------------------------------------------
3             |
      tenure  |   1.000345   .0074713     0.05   0.963     .9858084    1.015096
       exper  |    1.08562   .0116599     7.65   0.000     1.063006    1.108715
        male  |   1.470099   .1828511     3.10   0.002     1.152057    1.875941
         age  |    .976603   .0091121    -2.54   0.011     .9589058    .9946267
pyacctrati~2  |   1.440664   .1401485     3.75   0.000     1.190577    1.743284
pyperstudlep  |   1.021302    .007658     2.81   0.005     1.006403    1.036422
pyperstude~s  |   1.027237   .0048356     5.71   0.000     1.017803    1.036758
pyperstudw~e  |   1.006689   .0136911     0.49   0.624     .9802092    1.033884
pyperstudb~k  |    .991969   .0152985    -0.52   0.601     .9624331    1.022411
pyperstudl~o  |   .9758166   .0145681    -1.64   0.101     .9476774    1.004791
pyperstudm~e  |   .9786348   .0083367    -2.54   0.011     .9624307    .9951117
       Asian  |   .8841911   .8130077    -0.13   0.894     .1458385    5.360683
       Black  |   1.545091    .388311     1.73   0.083     .9441274    2.528584
      Latino  |   2.586873   .7398352     3.32   0.001     1.476845    4.531221
       Other  |   .4128047   .2804482    -1.30   0.193     .1090088    1.563247
   AsianMale  |   4.593082   7.139582     0.98   0.327     .2182623    96.65619
   BlackMale  |   1.174027   .4960754     0.38   0.704     .5128731    2.687486
  LatinoMale  |   .5913356   .2463878    -1.26   0.207     .2613182     1.33813
   OtherMale  |   1.735675   1.644203     0.58   0.561     .2710982    11.11247
------------------------------------------------------------------------------


--------->  region = 12

Iteration 0:   log likelihood = -878.18986
Iteration 1:   log likelihood =  -816.8932
Iteration 2:   log likelihood = -815.16453
Iteration 3:   log likelihood = -814.88078
Iteration 4:   log likelihood = -814.81824
Iteration 5:   log likelihood = -814.80494
Iteration 6:   log likelihood = -814.80225
Iteration 7:   log likelihood = -814.80163
Iteration 8:   log likelihood = -814.80148
Iteration 9:   log likelihood = -814.80145

Multinomial logistic regression                 Number of obs   =        805
                                                LR chi2(38)     =     126.78
                                                Prob > chi2     =     0.0000
Log likelihood = -814.80145                     Pseudo R2       =     0.0722

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
```

```
1             |  (base outcome)
--------------+----------------------------------------------------------------
2             |
      tenure  |   1.003255   .0125626     0.26   0.795     .9789321    1.028181
       exper  |   1.017662   .0177101     1.01   0.314     .9835359    1.052972
        male  |   .6772162   .1430967    -1.84   0.065     .4475765    1.024678
         age  |   .9627244    .014948    -2.45   0.014     .9338682    .9924722
pyacctrati~2  |   1.355288   .2505403     1.64   0.100       .94336    1.947089
pyperstudlep  |    1.00432   .0184213     0.24   0.814     .9688565    1.041082
pyperstude~s  |   .9912525   .0079538    -1.09   0.274     .9757853    1.006965
pyperstudw~e  |    .956698    .046129    -0.92   0.359     .8704274    1.051519
pyperstudb~k  |   .9820789   .0510902    -0.35   0.728     .8868799    1.087497
pyperstudl~o  |   .9713091   .0470974    -0.60   0.548     .8832506    1.068147
pyperstudm~e  |   1.013405   .0092485     1.46   0.145     .9954396    1.031695
       Asian  |   1.59e-06   .0015835    -0.01   0.989            0           .
       Black  |   1.047493   .3602287     0.13   0.893     .5338585    2.055303
      Latino  |   .7282745   .4271211    -0.54   0.589     .2307168    2.298851
       Other  |   6.89e-07   .0004427    -0.02   0.982            0           .
   AsianMale  |   3.84e+12   7.64e+15     0.01   0.988            0           .
   BlackMale  |   3.668586   2.369815     2.01   0.044     1.034294    13.01229
  LatinoMale  |   5.482559    5.61476     1.66   0.097     .7366424    40.80468
   OtherMale  |   8.75e+12   9.49e+15     0.03   0.978            0           .
--------------+----------------------------------------------------------------
3             |
      tenure  |   .9958917    .011131    -0.37   0.713     .9743127    1.017949
       exper  |   1.016337   .0158933     1.04   0.300     .9856592     1.04797
        male  |   1.122801     .22105     0.59   0.556     .7633501    1.651513
         age  |   1.003477   .0146344     0.24   0.812        .9752    1.032574
pyacctrati~2  |   1.877535   .3134683     3.77   0.000     1.353548    2.604369
pyperstudlep  |   1.023528   .0177314     1.34   0.179     .9893588    1.058878
pyperstude~s  |    1.01143   .0077529     1.48   0.138     .9963485     1.02674
pyperstudw~e  |    1.04902    .057217     0.88   0.380     .9426633    1.167377
pyperstudb~k  |   1.045019   .0609532     0.75   0.450      .932129    1.171582
pyperstudl~o  |   1.033845   .0567653     0.61   0.544     .9283648     1.15131
pyperstudm~e  |    1.00098   .0096578     0.10   0.919     .9822285    1.020089
       Asian  |   1.880547   2.721776     0.44   0.663     .1102333    32.08156
       Black  |   1.550524    .574222     1.18   0.236      .750316    3.204151
      Latino  |   .7710799   .5231378    -0.38   0.702     .2039874    2.914711
       Other  |    .870007   .8215866    -0.15   0.883     .1366769    5.537969
   AsianMale  |    .648082   1663.941    -0.00   1.000            0           .
   BlackMale  |   1.765749   1.190047     0.84   0.399     .4712506    6.616158
  LatinoMale  |   6.021919    6.44801     1.68   0.094     .7384229     49.1094
   OtherMale  |    1467821   1.28e+09     0.02   0.987            0           .
------------------------------------------------------------------------------


---------->  region = 13

Iteration 0:   log likelihood = -1567.4481
Iteration 1:   log likelihood = -1485.2674
Iteration 2:   log likelihood = -1483.9588
Iteration 3:   log likelihood = -1483.9037
Iteration 4:   log likelihood = -1483.8952
Iteration 5:   log likelihood = -1483.8931
Iteration 6:   log likelihood = -1483.8927
Iteration 7:   log likelihood = -1483.8926
Iteration 8:   log likelihood = -1483.8925

Multinomial logistic regression                 Number of obs   =       1440
                                                LR chi2(38)     =     167.11
                                                Prob > chi2     =     0.0000
Log likelihood = -1483.8925                     Pseudo R2       =     0.0533

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1             |  (base outcome)
```

```
-------------+----------------------------------------------------------------
2            |
      tenure |   1.013811   .0107158     1.30   0.194     .9930249    1.035033
       exper |   .9727827   .0112762    -2.38   0.017     .9509308    .9951367
        male |   .8861459   .1404411    -0.76   0.446     .6495347    1.208949
         age |   .9759603   .0097537    -2.43   0.015     .9570294    .9952656
pyacctrati~2 |   1.073701   .1441204     0.53   0.596     .8253315    1.396812
pyperstudlep |   1.008188   .0080076     1.03   0.305     .9926144    1.024005
pyperstude~s |   .9859349   .0071809    -1.94   0.052     .9719607     1.00011
pyperstudw~e |   1.011489   .0195623     0.59   0.555     .9738651    1.050566
pyperstudb~k |   1.027881    .024124     1.17   0.241       .98167    1.076268
pyperstudl~o |   1.024314   .0215629     1.14   0.254     .9829117    1.067461
pyperstudm~e |   .9781744   .0114896    -1.88   0.060     .9559124    1.000955
       Asian |   4.833541    5.50761     1.38   0.167     .5180339     45.0996
       Black |   1.513778   .4176829     1.50   0.133     .8814509    2.599719
      Latino |   1.637491   .3813402     2.12   0.034      1.03741    2.584683
       Other |   1.284943   1.195036     0.27   0.787     .2076065    7.952926
   AsianMale |   .1267634   .2320351    -1.13   0.259     .0035068    4.582286
   BlackMale |   1.241219   .5935514     0.45   0.651     .4861875    3.168789
  LatinoMale |   1.993444   .7876936     1.75   0.081     .9188794    4.324636
   OtherMale |      .6301   .7211773    -0.40   0.687     .0668608    5.938096
-------------+----------------------------------------------------------------
3            |
      tenure |    1.02761   .0102439     2.73   0.006     1.007727    1.047885
       exper |   1.011108   .0123775     0.90   0.367     .9871375    1.035661
        male |   .8562279   .1407541    -0.94   0.345     .6203854    1.181727
         age |   .9938552   .0109085    -0.56   0.574     .9727034    1.015467
pyacctrati~2 |   1.390308    .194851     2.35   0.019     1.056368    1.829812
pyperstudlep |    1.00391   .0082445     0.48   0.635     .9878799    1.020199
pyperstude~s |   1.018954   .0074972     2.55   0.011     1.004365    1.033755
pyperstudw~e |   .9845136   .0195873    -0.78   0.433      .946862    1.023662
pyperstudb~k |   .9753535   .0239555    -1.02   0.310     .9295138    1.023454
pyperstudl~o |   .9783451   .0209562    -1.02   0.307     .9381221    1.020293
pyperstudm~e |   .9649796   .0135733    -2.53   0.011     .9387397     .991953
       Asian |   1.440325   2.051298     0.26   0.798      .088346    23.48194
       Black |   .5257752   .1882091    -1.80   0.073     .2606753    1.060475
      Latino |    1.04227   .2657838     0.16   0.871     .6322951    1.718069
       Other |   2.122176    1.98037     0.81   0.420     .3407674    13.21615
   AsianMale |   3.10e-06   .0021291    -0.02   0.985            0           .
   BlackMale |   2.881772   1.641628     1.86   0.063     .9435495    8.801454
  LatinoMale |   1.978569   .8694064     1.55   0.120     .8362255    4.681436
   OtherMale |   .1796967   .2580631    -1.20   0.232     .0107678    2.998842
------------------------------------------------------------------------------


---------> region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -241.36858
Iteration 1:   log likelihood = -197.85605
Iteration 2:   log likelihood = -191.18248
Iteration 3:   log likelihood = -190.50499
Iteration 4:   log likelihood = -190.44554
Iteration 5:   log likelihood = -190.43364
Iteration 6:   log likelihood = -190.43111
Iteration 7:   log likelihood = -190.43053
Iteration 8:   log likelihood = -190.43039
Iteration 9:   log likelihood = -190.43036
Iteration 10:  log likelihood = -190.43036

Multinomial logistic regression                 Number of obs   =        247
                                                LR chi2(34)     =     101.88
                                                Prob > chi2     =     0.0000
Log likelihood = -190.43036                     Pseudo R2       =     0.2110

------------------------------------------------------------------------------
```

```
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.070678   .0373395     1.96   0.050     .9999387    1.146421
       exper |   1.085672   .0649035     1.37   0.169     .9656333    1.220633
        male |   4.856149    2.92952     2.62   0.009     1.488663    15.84119
         age |    .935328   .0546259    -1.14   0.252     .8341637    1.048761
pyacctrati~2 |   1.015923    .491965     0.03   0.974     .3932443    2.624573
pyperstudlep |   1.068568    .139114     0.51   0.610     .8279165     1.37917
pyperstude~s |    .968586   .0258198    -1.20   0.231     .9192795    1.020537
pyperstudw~e |   .5646567   .1702933    -1.90   0.058     .3126605    1.019755
pyperstudb~k |   .5199205   .1797915    -1.89   0.059     .2639894     1.02397
pyperstudl~o |   .5951166   .1742937    -1.77   0.076     .3352031    1.056565
pyperstudm~e |   1.046326   .0672595     0.70   0.481     .9224665    1.186817
       Asian |  (omitted)
       Black |   19.66539   31.40267     1.87   0.062      .859927    449.7214
      Latino |   4.07e-06   .0071566    -0.01   0.994            0           .
       Other |   20.42637   104316.7     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   .1090687   381.6365    -0.00   0.999            0           .
  LatinoMale |    2418775   4.26e+09     0.01   0.993            0           .
   OtherMale |    .116893   596.9681    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.047665   .0241766     2.02   0.044     1.001336    1.096139
       exper |   1.065971   .0340787     2.00   0.046     1.001227    1.134901
        male |   2.704681     .94244     2.86   0.004     1.366208    5.354456
         age |   .9412356   .0281222    -2.03   0.043        .8877    .9979999
pyacctrati~2 |     2.2932   .6520813     2.92   0.004     1.313407    4.003914
pyperstudlep |    1.01902   .0715391     0.27   0.788     .8880249    1.169339
pyperstude~s |   1.055076   .0163491     3.46   0.001     1.023514    1.087611
pyperstudw~e |   .8711193   .1672395    -0.72   0.472      .597946    1.269092
pyperstudb~k |   .7912739   .1699115    -1.09   0.276     .5194539    1.205332
pyperstudl~o |   .8774204   .1655341    -0.69   0.488     .6062057    1.269976
pyperstudm~e |   .9479044   .0326725    -1.55   0.121     .8859826    1.014154
       Asian |  (omitted)
       Black |   4.423785   7.023071     0.94   0.349     .1969933    99.34284
      Latino |   1.943642   2.515055     0.51   0.608     .1538754    24.55067
       Other |    8017013   1.86e+10     0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |    2197206   3.40e+09     0.01   0.992            0           .
  LatinoMale |    .604234   .9805993    -0.31   0.756     .0251077     14.5413
   OtherMale |   3.69e-15   1.21e-11    -0.01   0.992            0           .
------------------------------------------------------------------------------


---------->  region = 15

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -272.22599
Iteration 1:   log likelihood = -242.22037
Iteration 2:   log likelihood = -238.97322
Iteration 3:   log likelihood = -238.86576
Iteration 4:   log likelihood = -238.85383
Iteration 5:   log likelihood = -238.85165
Iteration 6:   log likelihood = -238.85116
Iteration 7:   log likelihood = -238.85105
Iteration 8:   log likelihood = -238.85102
Iteration 9:   log likelihood = -238.85102

Multinomial logistic regression                 Number of obs   =        267
                                                LR chi2(32)     =      66.75
                                                Prob > chi2     =     0.0003
```

```
Log likelihood = -238.85102                     Pseudo R2       =     0.1226

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.061259   .0434523     1.45   0.146     .9794213    1.149934
       exper |   .9360289   .0398068    -1.55   0.120      .861172    1.017393
        male |    .851044   .4450928    -0.31   0.758     .3053351    2.372069
         age |   1.029176   .0296879     1.00   0.319     .9726035     1.08904
pyacctrati~2 |   .3860036   .1946168    -1.89   0.059     .1436909    1.036939
pyperstudlep |   .9621451   .0390674    -0.95   0.342      .888542    1.041845
pyperstude~s |    .997162    .016501    -0.17   0.864     .9653393    1.030034
pyperstudw~e |   1.002962   .3643435     0.01   0.994     .4921193    2.044082
pyperstudb~k |   1.070582    .410839     0.18   0.859     .5046252    2.271282
pyperstudl~o |   1.006151   .3668288     0.02   0.987     .4924102    2.055889
pyperstudm~e |   .9964822   .0227032    -0.15   0.877     .9529638    1.041988
       Asian |  (omitted)
       Black |   9.15e+07   2.65e+11     0.01   0.995            0           .
      Latino |   4.264706   2.579189     2.40   0.016     1.303477    13.95323
       Other |   6.69e-07   .0011781    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   8.43e-08   .0002443    -0.01   0.996            0           .
  LatinoMale |   1.927676   1.770058     0.71   0.475     .3187365    11.65833
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9633874   .0209295    -1.72   0.086     .9232274    1.005294
       exper |   1.078063   .0286294     2.83   0.005     1.023386    1.135662
        male |   1.017505   .3308018     0.05   0.957      .538024    1.924293
         age |   .9819011   .0230517    -0.78   0.437     .9377443    1.028137
pyacctrati~2 |   .9225218   .2639241    -0.28   0.778     .5265705    1.616206
pyperstudlep |   1.014158   .0284468     0.50   0.616     .9599079    1.071474
pyperstude~s |   1.011598   .0103377     1.13   0.259     .9915384    1.032064
pyperstudw~e |   .9661002   .2154844    -0.15   0.877     .6239725    1.495819
pyperstudb~k |   .9519336   .2235148    -0.21   0.834     .6008193    1.508237
pyperstudl~o |   .9579778   .2141438    -0.19   0.848     .6181304    1.484673
pyperstudm~e |   .9701076   .0182383    -1.61   0.106     .9350119    1.006521
       Asian |  (omitted)
       Black |   1.501798   6454.951     0.00   1.000            0           .
      Latino |   .5285987   .3038417    -1.11   0.267     .1713367    1.630804
       Other |   1.28e-06   .0014619    -0.01   0.991            0           .
   AsianMale |  (omitted)
   BlackMale |   1.157898    4976.82     0.00   1.000            0           .
  LatinoMale |   2.105992   1.869134     0.84   0.401     .3698183    11.99292
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 16

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -513.59118
Iteration 1:   log likelihood =  -466.4979
Iteration 2:   log likelihood = -464.19248
Iteration 3:   log likelihood = -463.84262
Iteration 4:   log likelihood =  -463.7714
Iteration 5:   log likelihood = -463.75557
Iteration 6:   log likelihood = -463.75298
Iteration 7:   log likelihood = -463.75236
Iteration 8:   log likelihood = -463.75222
Iteration 9:   log likelihood = -463.75219

Multinomial logistic regression                 Number of obs   =        472
```

```
                                                LR chi2(34)     =      99.68
                                                Prob > chi2     =     0.0000
Log likelihood = -463.75219                     Pseudo R2       =     0.0970

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.031737    .021967     1.47   0.142     .9895689    1.075703
       exper |   .9478403    .025268    -2.01   0.044     .8995875    .9986814
        male |   1.134856   .3162805     0.45   0.650     .6572246    1.959601
         age |   .9731323    .021876    -1.21   0.226     .9311868    1.016967
pyacctrati~2 |   1.143458   .2673739     0.57   0.566     .7230766     1.80824
pyperstudlep |   1.036433   .0171865     2.16   0.031      1.00329    1.070672
pyperstude~s |   .9821171   .0088556    -2.00   0.045     .9649129    .9996279
pyperstudw~e |   .9641689   .0336299    -1.05   0.295     .9004579    1.032388
pyperstudb~k |   1.007619   .0398368     0.19   0.848      .932489    1.088803
pyperstudl~o |    .967994   .0326294    -0.97   0.335     .9061084    1.034106
pyperstudm~e |   1.013277    .012618     1.06   0.290     .9888452    1.038312
       Asian |  (omitted)
       Black |    .617462   .6339958    -0.47   0.639     .0825308      4.6196
      Latino |   2.958914   1.836919     1.75   0.081     .8763937        9.99
       Other |   3.015285   4.210473     0.79   0.429     .1953128     46.5507
   AsianMale |  (omitted)
   BlackMale |   2.20e-06   .0022273    -0.01   0.990            0           .
  LatinoMale |   481234.8   2.41e+08     0.03   0.979            0           .
   OtherMale |    4823034   8.04e+09     0.01   0.993            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.019108   .0165929     1.16   0.245     .9871003    1.052154
       exper |   1.001089   .0216316     0.05   0.960     .9595776    1.044397
        male |   2.472245   .6186163     3.62   0.000      1.51391    4.037225
         age |   .9937167   .0204025    -0.31   0.759     .9545224     1.03452
pyacctrati~2 |   1.770211   .3596341     2.81   0.005     1.188764    2.636053
pyperstudlep |   1.032728    .016434     2.02   0.043     1.001015    1.065446
pyperstude~s |   1.007765   .0074969     1.04   0.298      .993178    1.022566
pyperstudw~e |   1.047101   .0475736     1.01   0.311     .9578899    1.144621
pyperstudb~k |   1.045051   .0523242     0.88   0.379     .9473691    1.152806
pyperstudl~o |   1.029919   .0458647     0.66   0.508     .9438368    1.123851
pyperstudm~e |   .9865702   .0147461    -0.90   0.366     .9580876      1.0159
       Asian |  (omitted)
       Black |    1.28253   1.266325     0.25   0.801     .1851914    8.882066
      Latino |   2.062351   1.380192     1.08   0.279     .5555341     7.65622
       Other |   2.04e-06   .0019615    -0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |   .6014212   1.060429    -0.29   0.773     .0189817    19.05558
  LatinoMale |   466717.8   2.34e+08     0.03   0.979            0           .
   OtherMale |   321068.6   7.45e+08     0.01   0.996            0           .
------------------------------------------------------------------------------


---------->  region = 17

note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -435.73192
Iteration 1:   log likelihood = -386.89918
Iteration 2:   log likelihood = -385.51949
Iteration 3:   log likelihood = -385.45925
Iteration 4:   log likelihood = -385.44987
Iteration 5:   log likelihood = -385.44764
Iteration 6:   log likelihood = -385.44715
Iteration 7:   log likelihood = -385.44704
Iteration 8:   log likelihood = -385.44702
```

```
Multinomial logistic regression                 Number of obs   =        437
                                                LR chi2(32)     =     100.57
                                                Prob > chi2     =     0.0000
Log likelihood = -385.44702                     Pseudo R2       =     0.1154

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9945626   .0240835    -0.23   0.822     .9484623    1.042904
       exper |    1.06885   .0372632     1.91   0.056     .9982549    1.144437
        male |   1.933782   .6628193     1.92   0.054     .9877597    3.785852
         age |    .928998   .0291752    -2.35   0.019     .8735399    .9879769
pyacctrati~2 |   .9839576   .3065547    -0.05   0.959     .5342964    1.812052
pyperstudlep |    .984068   .0381847    -0.41   0.679     .9120026    1.061828
pyperstude~s |   .9762399   .0141101    -1.66   0.096     .9489726    1.004291
pyperstudw~e |   1.130165   .1168762     1.18   0.237     .9228147    1.384104
pyperstudb~k |   1.133828   .1258769     1.13   0.258     .9121099    1.409441
pyperstudl~o |   1.136452   .1175291     1.24   0.216      .927944    1.391811
pyperstudm~e |   1.010266   .0211143     0.49   0.625     .9697185    1.052508
       Asian |   1.97e-06   .0033653    -0.01   0.994            0           .
       Black |   .0000101   .0172017    -0.01   0.995            0           .
      Latino |   5.279164    3.55841     2.47   0.014     1.408687    19.78408
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   2.11e+13   1.45e+17     0.00   0.996            0           .
  LatinoMale |   1.122549   1.130944     0.11   0.909     .1558253    8.086722
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |    1.01425   .0175055     0.82   0.412     .9805139    1.049147
       exper |    1.05658   .0242739     2.40   0.017      1.01006    1.105244
        male |   4.411768   1.174771     5.57   0.000     2.617904    7.434841
         age |   .9778645   .0200493    -1.09   0.275     .9393476    1.017961
pyacctrati~2 |   1.569086   .3531521     2.00   0.045      1.00941    2.439077
pyperstudlep |   1.017039   .0250509     0.69   0.493     .9691065    1.067342
pyperstude~s |   1.022784   .0107927     2.13   0.033     1.001848    1.044157
pyperstudw~e |    .994759   .0731561    -0.07   0.943     .8612301    1.148991
pyperstudb~k |   .9857183   .0764255    -0.19   0.853     .8467531     1.14749
pyperstudl~o |   .9896371   .0727409    -0.14   0.887     .8568611    1.142987
pyperstudm~e |   .9792666   .0173487    -1.18   0.237     .9458472    1.013867
       Asian |   6.90e-06   .0076924    -0.01   0.991            0           .
       Black |   6.75e-06   .0075316    -0.01   0.991            0           .
      Latino |   2.911902   1.836173     1.69   0.090     .8461166    10.02128
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   74486.68   7.77e+08     0.00   0.999            0           .
  LatinoMale |   .8406666   .7893126    -0.18   0.853     .1334811    5.294534
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 18

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -424.8665
Iteration 1:   log likelihood = -396.52911
Iteration 2:   log likelihood = -395.82335
Iteration 3:   log likelihood = -395.78346
Iteration 4:   log likelihood = -395.77809
Iteration 5:   log likelihood = -395.77742
Iteration 6:   log likelihood = -395.77729
Iteration 7:   log likelihood = -395.77726
```

```
Multinomial logistic regression                 Number of obs   =        401
                                                LR chi2(34)     =      58.18
                                                Prob > chi2     =     0.0061
Log likelihood = -395.77726                     Pseudo R2       =     0.0685

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.013363   .0215806     0.62   0.533     .9719363    1.056555
       exper |   .9780496    .025445    -0.85   0.394     .9294285    1.029214
        male |    1.20008   .4147236     0.53   0.598     .6096098    2.362481
         age |   .9794989   .0210305    -0.96   0.335     .9391351    1.021598
pyacctrati~2 |   .6320902   .2292875    -1.26   0.206     .3104632     1.28691
pyperstudlep |   1.007032   .0191223     0.37   0.712     .9702423    1.045218
pyperstude~s |   .9967653    .014077    -0.23   0.819     .9695533    1.024741
pyperstudw~e |   .8314829   .1272245    -1.21   0.228     .6160439    1.122264
pyperstudb~k |   .8612263   .1369995    -0.94   0.348     .6305397    1.176311
pyperstudl~o |    .825183   .1256451    -1.26   0.207     .6122707    1.112134
pyperstudm~e |   1.017686    .017779     1.00   0.316     .9834299    1.053136
       Asian |  (omitted)
       Black |   2.036684   2.036408     0.71   0.477     .2869707    14.45473
      Latino |   1.998974   .8831961     1.57   0.117      .840863    4.752138
       Other |   .4799999   455.3744    -0.00   0.999            0           .
   AsianMale |  (omitted)
   BlackMale |   2.704431   4.241678     0.63   0.526     .1250364    58.49455
  LatinoMale |   .5658496    .338973    -0.95   0.342      .174899    1.830689
   OtherMale |    4052402   5.04e+09     0.01   0.990            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.005148   .0170937     0.30   0.763     .9721969    1.039215
       exper |   1.066169   .0263773     2.59   0.010     1.015704    1.119142
        male |   1.488074   .4403275     1.34   0.179     .8332018    2.657656
         age |   .9479647    .020745    -2.44   0.015     .9081648    .9895088
pyacctrati~2 |    1.59783   .4548189     1.65   0.100     .9146143    2.791408
pyperstudlep |   .9998142    .016943    -0.01   0.991      .967152     1.03358
pyperstude~s |   1.025671   .0131283     1.98   0.048      1.00026    1.051728
pyperstudw~e |   1.023669   .1436742     0.17   0.868     .7774844    1.347807
pyperstudb~k |   1.007858   .1485382     0.05   0.958      .755004    1.345394
pyperstudl~o |    1.00533   .1407005     0.04   0.970     .7641509     1.32263
pyperstudm~e |   1.015888   .0162286     0.99   0.324     .9845734    1.048199
       Asian |  (omitted)
       Black |   3.012573   2.967747     1.12   0.263     .4369195    20.77177
      Latino |   .9906845   .4043742    -0.02   0.982     .4451382    2.204834
       Other |     383846   2.11e+08     0.02   0.981            0           .
   AsianMale |  (omitted)
   BlackMale |   .7296121   1.162467    -0.20   0.843     .0321292    16.56853
  LatinoMale |   .4867575   .2794903    -1.25   0.210     .1579657      1.4999
   OtherMale |   2.63e-06   .0036134    -0.01   0.993            0           .
------------------------------------------------------------------------------


---------> region = 19

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -810.58857
Iteration 1:   log likelihood = -730.73965
Iteration 2:   log likelihood = -726.05995
Iteration 3:   log likelihood = -725.90045
Iteration 4:   log likelihood = -725.86623
Iteration 5:   log likelihood = -725.85792
Iteration 6:   log likelihood =  -725.8563
Iteration 7:   log likelihood = -725.85604
Iteration 8:   log likelihood = -725.85598
```

```
Iteration 9:   log likelihood = -725.85596

Multinomial logistic regression                 Number of obs   =        750
                                                LR chi2(36)     =     169.47
                                                Prob > chi2     =     0.0000
Log likelihood = -725.85596                     Pseudo R2       =     0.1045

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |   .9834978    .014126    -1.16   0.247     .9561974    1.011578
       exper |   .9824797   .0172364    -1.01   0.314     .9492712     1.01685
        male |   1.027792   .3170006     0.09   0.929     .5615263    1.881223
         age |   1.028634   .0138778     2.09   0.036     1.001791    1.056197
pyacctrati~2 |    1.19726   .2431152     0.89   0.375     .8041627    1.782515
pyperstudlep |   .9922516   .0059966    -1.29   0.198     .9805678    1.004075
pyperstude~s |   1.007836   .0100688     0.78   0.435      .988294    1.027765
pyperstudw~e |   1.184389   .1257403     1.59   0.111     .9618935    1.458351
pyperstudb~k |   1.092978   .1206831     0.81   0.421     .8802877    1.357058
pyperstudl~o |   1.146451   .1146567     1.37   0.172     .9423811    1.394711
pyperstudm~e |   1.005151   .0113593     0.45   0.649     .9831315    1.027663
       Asian |   1.351833    6275.05     0.00   1.000            0           .
       Black |   1.007763    .586165     0.01   0.989      .322298     3.15108
      Latino |    .686891   .1663039    -1.55   0.121     .4273685     1.10401
       Other |   .4113753   .5149415    -0.71   0.478     .0353787    4.783379
   AsianMale |  (omitted)
   BlackMale |   .3178113   .3426728    -1.06   0.288     .0384043    2.630015
  LatinoMale |   .9172961   .3473553    -0.23   0.820     .4366992      1.9268
   OtherMale |    1407641   1.42e+09     0.01   0.989            0           .
-------------+----------------------------------------------------------------
2            |  (base outcome)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.015047   .0152795     0.99   0.321     .9855374    1.045441
       exper |   1.115263   .0252307     4.82   0.000     1.066892    1.165827
        male |   1.592802   .5757344     1.29   0.198     .7843074    3.234724
         age |    .976361   .0190897    -1.22   0.221     .9396537    1.014502
pyacctrati~2 |   1.585174   .4007932     1.82   0.068     .9657405    2.601918
pyperstudlep |   1.017581   .0071629     2.48   0.013     1.003639    1.031718
pyperstude~s |   1.030137   .0130858     2.34   0.019     1.004806    1.056107
pyperstudw~e |   1.093675   .1121991     0.87   0.383     .8944668    1.337249
pyperstudb~k |   1.035115   .1131914     0.32   0.752     .8354269    1.282534
pyperstudl~o |   1.041954   .0999779     0.43   0.668     .8633235    1.257544
pyperstudm~e |    .982052   .0152595    -1.17   0.244     .9525947     1.01242
       Asian |   854207.3   2.79e+09     0.00   0.997            0           .
       Black |   .8741149   .6972111    -0.17   0.866     .1830769    4.173529
      Latino |   .7599927   .2215035    -0.94   0.346     .4292622    1.345539
       Other |   9.57e-07   .0007405    -0.02   0.986            0           .
   AsianMale |  (omitted)
   BlackMale |   .3470279   .5021478    -0.73   0.465     .0203554    5.916287
  LatinoMale |   .7303811   .3270004    -0.70   0.483     .3037081    1.756478
   OtherMale |   5.94e+12   7.55e+15     0.02   0.982            0           .
------------------------------------------------------------------------------


--------->  region = 20

Iteration 0:   log likelihood = -2091.9463
Iteration 1:   log likelihood = -1990.9741
Iteration 2:   log likelihood = -1986.7222
Iteration 3:   log likelihood = -1986.4615
Iteration 4:   log likelihood = -1986.4159
Iteration 5:   log likelihood = -1986.4058
Iteration 6:   log likelihood = -1986.4033
Iteration 7:   log likelihood = -1986.4028
Iteration 8:   log likelihood = -1986.4027
```

```
Iteration 9:   log likelihood = -1986.4027
Iteration 10:  log likelihood = -1986.4027

Multinomial logistic regression                 Number of obs   =       2037
                                                LR chi2(38)     =     211.09
                                                Prob > chi2     =     0.0000
Log likelihood = -1986.4027                     Pseudo R2       =     0.0505

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9965557   .0082182    -0.42   0.676     .9805778    1.012794
       exper |   1.003885   .0101953     0.38   0.703     .9841001    1.024067
        male |   1.419689   .2152066     2.31   0.021     1.054781    1.910841
         age |   .9764823   .0082642    -2.81   0.005     .9604183     .992815
pyacctrati~2 |   .9190313   .1145692    -0.68   0.498     .7198086    1.173393
pyperstudlep |   .9836338   .0068432    -2.37   0.018     .9703124    .9971382
pyperstude~s |   1.000682   .0055913     0.12   0.903     .9897832    1.011701
pyperstudw~e |   1.016054   .0383774     0.42   0.673     .9435525    1.094126
pyperstudb~k |   1.009087   .0408924     0.22   0.823     .9320394    1.092503
pyperstudl~o |   1.014585   .0391594     0.38   0.708      .940665    1.094313
pyperstudm~e |    .993945   .0073778    -0.82   0.413     .9795896    1.008511
       Asian |   .7142264   .8303102    -0.29   0.772     .0731624    6.972426
       Black |   1.779192   .5016852     2.04   0.041      1.02378    3.091998
      Latino |   1.142425    .176361     0.86   0.388     .8441591    1.546078
       Other |   .8930393   .7557814    -0.13   0.894     .1700187    4.690774
   AsianMale |   1.979753   3.641738     0.37   0.710     .0538063    72.84316
   BlackMale |   .9468293   .4043411    -0.13   0.898     .4099852     2.18663
  LatinoMale |   .9727349   .2260085    -0.12   0.905     .6169123    1.533789
   OtherMale |   1.049801   1.317276     0.04   0.969     .0897493    12.27957
-------------+----------------------------------------------------------------
3            |
      tenure |   1.015492   .0083713     1.86   0.062     .9992162    1.032032
       exper |   1.087873   .0145292     6.31   0.000     1.059765    1.116725
        male |   1.474098   .2520934     2.27   0.023     1.054284     2.06108
         age |   .9485952   .0113548    -4.41   0.000     .9265992    .9711133
pyacctrati~2 |   1.269302   .1695792     1.78   0.074     .9768868    1.649247
pyperstudlep |   1.013309    .006633     2.02   0.043     1.000392    1.026393
pyperstude~s |   1.029936   .0064783     4.69   0.000     1.017317    1.042712
pyperstudw~e |   .9918632    .039611    -0.20   0.838     .9171878    1.072619
pyperstudb~k |   .9628346   .0413384    -0.88   0.378     .8851282    1.047363
pyperstudl~o |   .9646083    .039337    -0.88   0.377     .8905099    1.044872
pyperstudm~e |   .9839129   .0090408    -1.77   0.078     .9663519    1.001793
       Asian |   3.85e-07   .0005725    -0.01   0.992            0           .
       Black |   1.696082   .5252392     1.71   0.088     .9243756     3.11204
      Latino |    .861928   .1466093    -0.87   0.382     .6175701    1.202973
       Other |   3.91e-07   .0004595    -0.01   0.990            0           .
   AsianMale |   1.135279   3070.664     0.00   1.000            0           .
   BlackMale |   .5554956   .3076348    -1.06   0.288     .1876217    1.644668
  LatinoMale |   .9164345   .2451502    -0.33   0.744      .542502    1.548109
   OtherMale |    1800987   2.12e+09     0.01   0.990            0           .
------------------------------------------------------------------------------

by pyschooltype:

. bysort pyschooltype : mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian
Black Latino
>  Other AsianMale BlackMale LatinoMale OtherMale if validcert2006a==1, rrr iter(20)


---------->  pyschooltype =
no observations
```

```
---------->  pyschooltype = B

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -381.34099
Iteration 1:   log likelihood = -347.85883
Iteration 2:   log likelihood = -340.26665
Iteration 3:   log likelihood = -335.67685
Iteration 4:   log likelihood =  -335.4932
Iteration 5:   log likelihood =  -335.4823
Iteration 6:   log likelihood = -335.48154
Iteration 7:   log likelihood = -335.48138
Iteration 8:   log likelihood = -335.48134
Iteration 9:   log likelihood = -335.48133

Multinomial logistic regression                 Number of obs   =        418
                                                LR chi2(34)     =      91.72
                                                Prob > chi2     =     0.0000
Log likelihood = -335.48133                     Pseudo R2       =     0.1203

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.076232   .0334019     2.37   0.018     1.012717    1.143731
       exper |    .942772   .0349444    -1.59   0.112     .8767108    1.013811
        male |    2.07479     .93627     1.62   0.106     .8567634    5.024438
         age |   .9765877   .0291303    -0.79   0.427     .9211302    1.035384
pyacctrati~2 |   .6817999   .2786596    -0.94   0.349     .3060279    1.518983
pyperstudlep |   .9929996   .0263021    -0.27   0.791     .9427637    1.045912
pyperstude~s |   .9915335   .0151265    -0.56   0.577     .9623249    1.021629
pyperstudw~e |   .9099342   .0308659    -2.78   0.005     .8514052    .9724866
pyperstudb~k |    .933693   .0345138    -1.86   0.063     .8684396     1.00385
pyperstudl~o |   .9397404   .0337901    -1.73   0.084     .8757928    1.008357
pyperstudm~e |   .9473156   .0288729    -1.78   0.076     .8923829     1.00563
       Asian |  (omitted)
       Black |   3.855862   3.432607     1.52   0.130      .673528    22.07432
      Latino |   1.577541   1.378824     0.52   0.602     .2844471    8.749025
       Other |   12.17352     22.211     1.37   0.171     .3406979    434.9732
   AsianMale |  (omitted)
   BlackMale |   .5746528    .675532    -0.47   0.637     .0573822    5.754848
  LatinoMale |   6.465887   7.599413     1.59   0.112     .6459569    64.72211
   OtherMale |   3.99e-07    .000569    -0.01   0.992            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9807477   .0159591    -1.19   0.232      .949962    1.012531
       exper |   1.016549   .0187526     0.89   0.374     .9804514    1.053976
        male |   1.423456   .3438962     1.46   0.144     .8865438    2.285535
         age |   .9972953    .018055    -0.15   0.881     .9625287    1.033318
pyacctrati~2 |   .6353879   .1561053    -1.85   0.065     .3925649     1.02841
pyperstudlep |   .9965235   .0187605    -0.18   0.853     .9604237     1.03398
pyperstude~s |   1.004079   .0080833     0.51   0.613     .9883604    1.020048
pyperstudw~e |   .9337177   .0254466    -2.52   0.012     .8851518    .9849483
pyperstudb~k |   .9211411   .0270581    -2.80   0.005      .869606    .9757304
pyperstudl~o |   .9313957   .0262243    -2.52   0.012     .8813895    .9842391
pyperstudm~e |    1.00815   .0093512     0.88   0.382      .989988    1.026646
       Asian |  (omitted)
       Black |   2.183807    1.79791     0.95   0.343     .4349377    10.96482
      Latino |    .220333   .2399938    -1.39   0.165     .0260569    1.863098
       Other |   5.98e-07   .0012834    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |   .5191732   .5549438    -0.61   0.540     .0638945    4.218528
  LatinoMale |   24.45608   33.80431     2.31   0.021     1.628612    367.2453
   OtherMale |   1.773583   4093.171     0.00   1.000            0           .
```

```
-------------------------------------------------------------------------------


---------->  pyschooltype = E

Iteration 0:   log likelihood = -11168.659
Iteration 1:   log likelihood = -10550.695
Iteration 2:   log likelihood = -10544.723
Iteration 3:   log likelihood = -10544.717
Iteration 4:   log likelihood = -10544.717

Multinomial logistic regression                 Number of obs   =      10279
                                                LR chi2(38)     =    1247.88
                                                Prob > chi2     =     0.0000
Log likelihood = -10544.717                     Pseudo R2       =     0.0559

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.015546   .0042739     3.67   0.000     1.007204    1.023957
       exper |   1.006362    .005403     1.18   0.237     .9958283    1.017008
        male |   1.537765   .1332481     4.97   0.000     1.297576    1.822413
         age |   .9777142   .0041106    -5.36   0.000     .9696906    .9858042
pyacctrati~2 |   .9538169   .0434054    -1.04   0.299     .8724275    1.042799
pyperstudlep |   1.009361   .0018642     5.04   0.000     1.005714    1.013021
pyperstude~s |   .9890224   .0021893    -4.99   0.000     .9847407    .9933228
pyperstudw~e |   1.000781   .0054749     0.14   0.887     .9901074    1.011569
pyperstudb~k |   1.001466   .0061986     0.24   0.813     .9893899    1.013689
pyperstudl~o |   1.002458    .005811     0.42   0.672     .9911335    1.013913
pyperstudm~e |   1.010139   .0037814     2.69   0.007     1.002755    1.017578
       Asian |   1.057347   .4653438     0.13   0.899     .4462716    2.505161
       Black |    1.13998   .1074238     1.39   0.164      .947733    1.371225
      Latino |   1.184323   .0936338     2.14   0.032     1.014316    1.382824
       Other |   .9489309   .2774081    -0.18   0.858     .5350525    1.682956
   AsianMale |   1.332301   1.077131     0.35   0.723     .2731667     6.49796
   BlackMale |   .8754224   .1732364    -0.67   0.501     .5939835    1.290212
  LatinoMale |   .7854689   .1153915    -1.64   0.100     .5889533    1.047556
   OtherMale |   1.469941   .8309076     0.68   0.496     .4854502    4.450975
-------------+-----------------------------------------------------------------
3            |
      tenure |   1.020691   .0036543     5.72   0.000     1.013554    1.027879
       exper |   1.071268   .0054737    13.47   0.000     1.060594     1.08205
        male |   2.542572   .1966065    12.07   0.000      2.18501    2.958647
         age |   .9808826   .0042193    -4.49   0.000     .9726477    .9891872
pyacctrati~2 |   .9812732   .0429094    -0.43   0.666     .9006755    1.069083
pyperstudlep |   .9988038   .0018142    -0.66   0.510     .9952543    1.002366
pyperstude~s |   1.005145   .0020899     2.47   0.014     1.001057    1.009249
pyperstudw~e |   1.007316      .0056     1.31   0.190     .9963995    1.018351
pyperstudb~k |   .9953309   .0062361    -0.75   0.455     .9831832    1.007629
pyperstudl~o |   .9965105   .0058566    -0.59   0.552     .9850975    1.008056
pyperstudm~e |   1.000815   .0037282     0.22   0.827     .9935339    1.008148
       Asian |   1.506146   .6641636     0.93   0.353     .6346198    3.574543
       Black |   .9371899   .0907305    -0.67   0.503     .7752142    1.133009
      Latino |   1.250589   .0982335     2.85   0.004     1.072144    1.458735
       Other |   .7586407   .2314694    -0.91   0.365     .4171818     1.37958
   AsianMale |   .6227451   .5207249    -0.57   0.571      .120936    3.206751
   BlackMale |   .5551575   .1111993    -2.94   0.003     .3749028    .8220794
  LatinoMale |   .5600793   .0793846    -4.09   0.000     .4242304    .7394304
   OtherMale |   .3532953   .2529601    -1.45   0.146     .0868312    1.437473
-------------------------------------------------------------------------------


---------->  pyschooltype = M
```

```
Iteration 0:   log likelihood = -6029.9181
Iteration 1:   log likelihood = -5732.1575
Iteration 2:   log likelihood = -5726.7195
Iteration 3:   log likelihood = -5726.4794
Iteration 4:   log likelihood = -5726.4248
Iteration 5:   log likelihood = -5726.4138
Iteration 6:   log likelihood = -5726.4117
Iteration 7:   log likelihood = -5726.4115
Iteration 8:   log likelihood = -5726.4115
Iteration 9:   log likelihood = -5726.4115

Multinomial logistic regression                 Number of obs   =       5709
                                                LR chi2(38)     =     607.01
                                                Prob > chi2     =     0.0000
Log likelihood = -5726.4115                     Pseudo R2       =     0.0503

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.007989   .0050088     1.60   0.109     .9982198    1.017854
       exper |   1.009164   .0062431     1.47   0.140     .9970014    1.021474
        male |   1.546415   .1231131     5.48   0.000     1.323002    1.807557
         age |   .9688566   .0048738    -6.29   0.000     .9593512    .9784563
pyacctrati~2 |   .9785203   .0679396    -0.31   0.754      .854024    1.121165
pyperstudlep |   1.011215   .0037745     2.99   0.003     1.003844     1.01864
pyperstude~s |   .9925757   .0027885    -2.65   0.008     .9871255    .9980561
pyperstudw~e |   1.004722   .0075465     0.63   0.531     .9900393    1.019622
pyperstudb~k |   1.010147   .0085896     1.19   0.235      .993451    1.027123
pyperstudl~o |   1.004368   .0080957     0.54   0.589     .9886251    1.020361
pyperstudm~e |   1.009614   .0043512     2.22   0.026     1.001122    1.018178
       Asian |   1.336333   .5305723     0.73   0.465     .6137016    2.909862
       Black |   .8950533   .1072271    -0.93   0.355     .7077425    1.131938
      Latino |   2.129769   .2525029     6.38   0.000     1.688166    2.686891
       Other |   .7556312   .2913029    -0.73   0.467     .3549472     1.60863
   AsianMale |   1.215337   .8686598     0.27   0.785     .2994345    4.932776
   BlackMale |   1.705277   .3094005     2.94   0.003     1.194966    2.433517
  LatinoMale |   .8437765   .1349799    -1.06   0.288     .6166797    1.154503
   OtherMale |   2.322543   1.336543     1.46   0.143     .7518422    7.174652
-------------+----------------------------------------------------------------
3            |
      tenure |   1.009298   .0051243     1.82   0.068     .9993046    1.019392
       exper |   1.071923   .0079692     9.34   0.000     1.056417    1.087657
        male |   1.878492   .1667692     7.10   0.000     1.578487    2.235514
         age |    .962267   .0063077    -5.87   0.000     .9499833    .9747095
pyacctrati~2 |   .9629765   .0772042    -0.47   0.638     .8229488     1.12683
pyperstudlep |   1.003362   .0047798     0.70   0.481      .994037    1.012774
pyperstude~s |   1.008341   .0032723     2.56   0.010     1.001947    1.014775
pyperstudw~e |   1.028352   .0102843     2.80   0.005     1.008392    1.048708
pyperstudb~k |   1.012318   .0113839     1.09   0.276     .9902503    1.034878
pyperstudl~o |   1.011841   .0107726     1.11   0.269     .9909458    1.033177
pyperstudm~e |   .9975898   .0058607    -0.41   0.681     .9861689    1.009143
       Asian |   .4386588   .3345783    -1.08   0.280     .0983761    1.955978
       Black |   .8038998   .1263141    -1.39   0.165     .5908203    1.093826
      Latino |   1.611366   .2421433     3.17   0.001      1.20028    2.163247
       Other |   .4538059   .2829075    -1.27   0.205     .1337279    1.539991
   AsianMale |   2.24e-06   .0014741    -0.02   0.984            0           .
   BlackMale |   2.242862   .4868767     3.72   0.000     1.465632    3.432258
  LatinoMale |   .8921258    .172914    -0.59   0.556     .6101606    1.304392
   OtherMale |   3.298289   2.589257     1.52   0.128     .7080593    15.36412
------------------------------------------------------------------------------


---------> pyschooltype = S
```

```
Iteration 0:   log likelihood =  -6954.568
Iteration 1:   log likelihood = -6646.4779
Iteration 2:   log likelihood = -6634.6483
Iteration 3:   log likelihood = -6634.3924
Iteration 4:   log likelihood = -6634.3369
Iteration 5:   log likelihood = -6634.3233
Iteration 6:   log likelihood = -6634.3206
Iteration 7:   log likelihood =   -6634.32
Iteration 8:   log likelihood = -6634.3199
Iteration 9:   log likelihood = -6634.3198

Multinomial logistic regression                 Number of obs   =       7180
                                                LR chi2(38)     =     640.50
                                                Prob > chi2     =     0.0000
Log likelihood = -6634.3198                     Pseudo R2       =     0.0460

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.005076    .003897     1.31   0.192     .9974669    1.012743
       exper |    1.00868   .0050612     1.72   0.085     .9988093    1.018649
        male |    1.12005   .0745624     1.70   0.089     .9830428    1.276152
         age |   .9703144   .0042885    -6.82   0.000     .9619453    .9787562
pyacctrati~2 |   .9676917   .0766646    -0.41   0.678     .8285167    1.130245
pyperstudlep |   1.020022    .004751     4.26   0.000     1.010752    1.029376
pyperstude~s |   .9862338   .0023284    -5.87   0.000     .9816807    .9908081
pyperstudw~e |   .9997855   .0061978    -0.03   0.972     .9877114    1.012007
pyperstudb~k |    1.00601   .0070141     0.86   0.390      .992356    1.019852
pyperstudl~o |   1.005306   .0067044     0.79   0.427     .9922514    1.018533
pyperstudm~e |   1.004205   .0035759     1.18   0.239     .9972207    1.011238
       Asian |   .6220012   .3613343    -0.82   0.414     .1992092    1.942107
       Black |    1.32932   .1523855     2.48   0.013     1.061824    1.664203
      Latino |   1.735364   .2030839     4.71   0.000     1.379676    2.182749
       Other |   .5740975    .251812    -1.27   0.206     .2430131    1.356256
   AsianMale |   2.352111   1.845711     1.09   0.276     .5052617    10.94962
   BlackMale |   1.990454    .323689     4.23   0.000     1.447202    2.737632
  LatinoMale |   1.142452   .1659789     0.92   0.359     .8593556    1.518809
   OtherMale |   2.190614   1.221644     1.41   0.160     .7343021    6.535173
-------------+----------------------------------------------------------------
3            |
      tenure |   .9974427   .0046538    -0.55   0.583     .9883631    1.006606
       exper |   1.062559   .0077258     8.35   0.000     1.047524     1.07781
        male |   1.849656     .16786     6.78   0.000     1.548256     2.20973
         age |   .9634118   .0066072    -5.44   0.000     .9505487     .976449
pyacctrati~2 |   1.211266   .1244662     1.87   0.062     .9903131    1.481517
pyperstudlep |   .9996439   .0070487    -0.05   0.960     .9859237    1.013555
pyperstude~s |   1.017035   .0030954     5.55   0.000     1.010986     1.02312
pyperstudw~e |   1.040162   .0116378     3.52   0.000       1.0176    1.063223
pyperstudb~k |   1.025767   .0125727     2.08   0.038     1.001419    1.050708
pyperstudl~o |   1.024398    .012015     2.06   0.040     1.001118     1.04822
pyperstudm~e |    .992551   .0051074    -1.45   0.146     .9825909    1.002612
       Asian |   .5378449   .5637573    -0.59   0.554      .068936    4.196314
       Black |   .5927777   .1374002    -2.26   0.024     .3763496    .9336675
      Latino |   1.197068   .2260859     0.95   0.341     .8267147    1.733334
       Other |   .5526064   .4123965    -0.79   0.427     .1279927    2.385869
   AsianMale |   7.65e-06   .0027737    -0.03   0.974            0    3.1e+303
   BlackMale |   2.749637   .7681753     3.62   0.000     1.590275     4.75421
  LatinoMale |   .9791882   .2150281    -0.10   0.924     .6367131    1.505874
   OtherMale |   1.924142   1.734381     0.73   0.468     .3288379    11.25881
------------------------------------------------------------------------------
```

2006-07

```
. mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian Black Latino Other
AsianMale Black
> Male LatinoMale OtherMale if validcert2007a==1, rrr iter(20)

Iteration 0:   log likelihood = -25486.465
Iteration 1:   log likelihood = -24301.514
Iteration 2:   log likelihood = -24279.606
Iteration 3:   log likelihood = -24279.568
Iteration 4:   log likelihood = -24279.568

Multinomial logistic regression                 Number of obs   =      23874
                                                LR chi2(38)     =    2413.79
                                                Prob > chi2     =     0.0000
Log likelihood = -24279.568                     Pseudo R2       =     0.0474

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.013292   .0024718     5.41   0.000     1.008459    1.018149
       exper |   1.004055    .003052     1.33   0.183     .9980912    1.010055
        male |   1.187096   .0487903     4.17   0.000     1.095219    1.286681
         age |   .9745761   .0024401   -10.29   0.000     .9698053    .9793703
pyacctrati~2 |   .9783835   .0249506    -0.86   0.391     .9306832    1.028529
pyperstudlep |   1.007447   .0012815     5.83   0.000     1.004938    1.009962
pyperstude~s |   .9927348    .001258    -5.75   0.000     .9902723    .9952035
pyperstudw~e |   .9919012   .0034031    -2.37   0.018     .9852535    .9985937
pyperstudb~k |   .9946336   .0038503    -1.39   0.165     .9871158    1.002209
pyperstudl~o |   .9953357   .0036334    -1.28   0.200     .9882398    1.002483
pyperstudm~e |    1.00434   .0021271     2.04   0.041      1.00018    1.008518
       Asian |   .8380183    .207294    -0.71   0.475      .516058    1.360845
       Black |   1.023204   .0620259     0.38   0.705       .90858    1.152289
      Latino |   1.407185   .0773964     6.21   0.000     1.263381    1.567357
       Other |   .8530675    .161853    -0.84   0.402     .5881451    1.237321
   AsianMale |    1.61677   .6756472     1.15   0.250     .7127411    3.667455
   BlackMale |   1.766184   .1728201     5.81   0.000     1.457963    2.139565
  LatinoMale |    1.14844   .0923465     1.72   0.085     .9809866    1.344479
   OtherMale |   1.736233   .5263119     1.82   0.069     .9584725    3.145115
-------------+----------------------------------------------------------------
3            |
      tenure |   1.015979   .0023845     6.75   0.000     1.011317    1.020664
       exper |   1.055519   .0035184    16.21   0.000     1.048646    1.062438
        male |   1.428321   .0612768     8.31   0.000     1.313132    1.553615
         age |   .9787949   .0028724    -7.30   0.000     .9731812     .984441
pyacctrati~2 |   1.513138   .0409595    15.30   0.000     1.434951    1.595585
pyperstudlep |   1.009731   .0013873     7.05   0.000     1.007016    1.012454
pyperstude~s |   1.018476   .0013866    13.45   0.000     1.015762    1.021197
pyperstudw~e |   1.011815   .0041219     2.88   0.004     1.003768    1.019926
pyperstudb~k |   .9981723   .0045729    -0.40   0.690     .9892497    1.007175
pyperstudl~o |   .9938696   .0042862    -1.43   0.154     .9855042    1.002306
pyperstudm~e |   .9947786   .0025908    -2.01   0.044     .9897136    .9998695
       Asian |   .8191581   .2444179    -0.67   0.504     .4564453    1.470099
       Black |   .7891653   .0569786    -3.28   0.001     .6850311    .9091293
      Latino |   1.200705   .0742749     2.96   0.003     1.063608    1.355474
       Other |   .6861283    .158317    -1.63   0.103     .4365152    1.078478
   AsianMale |   1.212673   .6145599     0.38   0.704     .4491288    3.274287
   BlackMale |   1.566289    .182814     3.84   0.000     1.246009    1.968894
  LatinoMale |   1.029866   .0931741     0.33   0.745     .8625234    1.229676
   OtherMale |   1.192749   .4557025     0.46   0.645     .5640772    2.522085
------------------------------------------------------------------------------

. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=23874)
```

Ho: All coefficients associated with given variable(s) are 0.

	chi2	df	P>chi2
tenure	55.069	2	0.000
exper	295.192	2	0.000
male	70.798	2	0.000
age	126.623	2	0.000
pyacctrati~2	285.232	2	0.000
pyperstudlep	60.666	2	0.000
pyperstude~s	311.752	2	0.000
pyperstudw~e	22.119	2	0.000
pyperstudb~k	1.938	2	0.379
pyperstudl~o	2.714	2	0.257
pyperstudm~e	12.525	2	0.002
Asian	0.747	2	0.688
Black	13.224	2	0.001
Latino	39.017	2	0.000
Other	2.944	2	0.229
AsianMale	1.325	2	0.515
BlackMale	37.294	2	0.000
LatinoMale	3.144	2	0.208
OtherMale	3.340	2	0.188

**** Wald tests for independent variables (N=23874)

Ho: All coefficients associated with given variable(s) are 0.

	chi2	df	P>chi2
tenure	54.979	2	0.000
exper	278.993	2	0.000
male	70.734	2	0.000
age	124.975	2	0.000
pyacctrati~2	283.616	2	0.000
pyperstudlep	60.052	2	0.000
pyperstude~s	304.169	2	0.000
pyperstudw~e	21.716	2	0.000
pyperstudb~k	1.943	2	0.379
pyperstudl~o	2.709	2	0.258
pyperstudm~e	12.350	2	0.002
Asian	0.745	2	0.689
Black	12.957	2	0.002
Latino	39.007	2	0.000
Other	2.836	2	0.242
AsianMale	1.323	2	0.516
BlackMale	36.739	2	0.000
LatinoMale	3.145	2	0.208
OtherMale	3.334	2	0.189

**** Hausman tests of IIA assumption (N=23874)

Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

Omitted	chi2	df	P>chi2	evidence
2	-336.093	19	---	---
3	0.436	19	1.000	for Ho

Note: If chi2<0, the estimated model does not meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=23874)

```
 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+--------------------------------------------------------
       2 |  -5023.419  -5016.515  13.807   20    0.840   for Ho
       3 |  -5967.521  -5958.447  18.147   20    0.578   for Ho
-------------------------------------------------------------------

**** Wald tests for combining alternatives (N=23874)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1524.505   19    0.000
       2-       1  |  482.582   19    0.000
       3-       1  | 1430.445   19    0.000
-----------------------------------------

**** LR tests for combining alternatives (N=23874)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1695.529   19    0.000
       2-       1  |  496.791   19    0.000
       3-       1  | 1586.713   19    0.000
-----------------------------------------

by region:

. bysort region: mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian
Black Latino Other
> AsianMale BlackMale LatinoMale OtherMale if validcert2007a==1, rrr iter(20)


---------->  region = 1

note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -1834.7109
Iteration 1:   log likelihood = -1743.9774
Iteration 2:   log likelihood =   -1740.32
Iteration 3:   log likelihood = -1739.6273
Iteration 4:   log likelihood = -1739.5283
Iteration 5:   log likelihood = -1739.5087
Iteration 6:   log likelihood = -1739.5042
Iteration 7:   log likelihood = -1739.5031
Iteration 8:   log likelihood = -1739.5029
Iteration 9:   log likelihood = -1739.5028

Multinomial logistic regression                 Number of obs   =       1702
                                                LR chi2(36)     =     190.42
                                                Prob > chi2     =     0.0000
Log likelihood = -1739.5028                     Pseudo R2       =     0.0519

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |    .982265   .0084758    -2.07   0.038     .9657924    .9990186
       exper |   1.023804   .0130084     1.85   0.064     .9986224     1.04962
        male |    .760196   .2296459    -0.91   0.364     .4205214    1.374242
         age |   1.006777   .0109141     0.62   0.533      .985611    1.028397
```

```
pyacctrati~2 |   1.150767   .1087493     1.49   0.137     .9561973    1.384928
pyperstudlep |   .9940288   .0029964    -1.99   0.047     .9881733    .9999191
pyperstude~s |   .9941995   .0066278    -0.87   0.383     .9812938    1.007275
pyperstudw~e |   .9562127   .0681301    -0.63   0.530     .8315846    1.099519
pyperstudb~k |   .7237262    .158459    -1.48   0.140     .4711993    1.111588
pyperstudl~o |   .9612209   .0626393    -0.61   0.544     .8459671    1.092177
pyperstudm~e |   1.015752    .009765     1.63   0.104     .9967921    1.035072
       Asian |   3.515543    3.95684     1.12   0.264     .3872059    31.91854
       Black |    1492957   1.29e+09     0.02   0.987            0           .
      Latino |   .8001954   .1736166    -1.03   0.304     .5230134    1.224276
       Other |    .475753     .37737    -0.94   0.349     .1005087    2.251954
   AsianMale |   .3348458   1634.136    -0.00   1.000            0           .
   BlackMale |   5.72e-07   .0004936    -0.02   0.987            0           .
  LatinoMale |   .9778158   .3217454    -0.07   0.946     .5130662    1.863548
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
2            |  (base outcome)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.016772    .010115     1.67   0.095     .9971392    1.036792
       exper |   1.072745   .0181952     4.14   0.000     1.037669    1.109006
        male |    .651162   .2388896    -1.17   0.242     .3172573    1.336492
         age |   .9707833   .0144139    -2.00   0.046     .9429397    .9994492
pyacctrati~2 |   1.754935   .1893631     5.21   0.000      1.42041    2.168246
pyperstudlep |   1.010334   .0034667     3.00   0.003     1.003562    1.017151
pyperstude~s |   .9836925   .0077179    -2.10   0.036     .9686815    .9989361
pyperstudw~e |   1.151735   .1021124     1.59   0.111     .9680221    1.370313
pyperstudb~k |   1.172905   .1065414     1.76   0.079       .98162    1.401465
pyperstudl~o |   1.150685   .0925734     1.74   0.081     .9828263    1.347213
pyperstudm~e |   1.015552   .0118896     1.32   0.187      .992514    1.039124
       Asian |   1.68e-06    .001511    -0.01   0.988            0           .
       Black |    1826483   1.58e+09     0.02   0.987            0           .
      Latino |   .6920836   .1690415    -1.51   0.132     .4287977    1.117029
       Other |   .3133165   .3597887    -1.01   0.312     .0330011    2.974665
   AsianMale |   3.63e+13   1.29e+17     0.01   0.993            0           .
   BlackMale |   4.86e-13   5.43e-10    -0.03   0.980            0           .
  LatinoMale |    1.50444    .597131     1.03   0.303     .6910706    3.275121
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 2

Iteration 0:   log likelihood = -775.56601
Iteration 1:   log likelihood = -723.39046
Iteration 2:   log likelihood = -721.61908
Iteration 3:   log likelihood = -721.32538
Iteration 4:   log likelihood = -721.28022
Iteration 5:   log likelihood =  -721.2693
Iteration 6:   log likelihood = -721.26701
Iteration 7:   log likelihood = -721.26653
Iteration 8:   log likelihood = -721.26642
Iteration 9:   log likelihood = -721.26639

Multinomial logistic regression                 Number of obs   =        746
                                                LR chi2(38)     =     108.60
                                                Prob > chi2     =     0.0000
Log likelihood = -721.26639                     Pseudo R2       =     0.0700

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.007901   .0146969     0.54   0.589     .9795032    1.037122
       exper |   .9812759   .0184092    -1.01   0.314     .9458498    1.018029
```

```
        male |   1.253774   .3593778     0.79   0.430     .7148805    2.198897
         age |    .969746   .0151249    -1.97   0.049     .9405503    .9998479
pyacctrati~2 |   1.031093   .1967922     0.16   0.873     .7093157    1.498844
pyperstudlep |    .969034   .0175636    -1.74   0.083     .9352142    1.004077
pyperstude~s |   1.015894   .0077603     2.06   0.039     1.000797    1.031218
pyperstudw~e |   .7730909   .0640084    -3.11   0.002     .6572869    .9092978
pyperstudb~k |    .730417   .0695978    -3.30   0.001     .6059882     .880395
pyperstudl~o |    .779346   .0624188    -3.11   0.002     .6661262    .9118095
pyperstudm~e |   1.009727   .0134734     0.73   0.468     .9836621    1.036483
       Asian |   5.47e-07   .0007319    -0.01   0.991            0           .
       Black |   1.578391   1.261256     0.57   0.568     .3296397    7.557704
      Latino |    1.46639   .3812293     1.47   0.141     .8809594    2.440863
       Other |   8.92e-07   .0006793    -0.02   0.985            0           .
   AsianMale |    3.74618   6873.146     0.00   0.999            0           .
   BlackMale |   1.608311   1.921502     0.40   0.691     .154672    16.72355
  LatinoMale |   1.157988   .4620294     0.37   0.713     .5297619    2.531207
   OtherMale |    2744302   2.09e+09     0.02   0.984            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.000521   .0126198     0.04   0.967     .9760902    1.025564
       exper |   1.037802   .0187518     2.05   0.040     1.001693    1.075214
        male |   .7947042   .2272434    -0.80   0.422     .4537398    1.391888
         age |   .9846997   .0157645    -0.96   0.336     .9542815    1.016088
pyacctrati~2 |   1.691065   .3073453     2.89   0.004     1.184288      2.4147
pyperstudlep |   .9994665   .0164035    -0.03   0.974     .9678279    1.032139
pyperstude~s |   1.020061    .007817     2.59   0.010     1.004855    1.035498
pyperstudw~e |   .9782187   .0831559    -0.26   0.796     .8280899    1.155565
pyperstudb~k |   .9024022   .0905663    -1.02   0.306     .7412632     1.09857
pyperstudl~o |   .9683291   .0799334    -0.39   0.697     .8236795    1.138381
pyperstudm~e |   .9796383   .0155761    -1.29   0.196     .9495805    1.010648
       Asian |   8.01e-07   .0010917    -0.01   0.992            0           .
       Black |   2.480014   1.816687     1.24   0.215     .5900958    10.42283
      Latino |   .9644965   .2450965    -0.14   0.887     .5861308    1.587109
       Other |   .5928863   .6838155    -0.45   0.650     .0618335    5.684851
   AsianMale |    5068532   6.91e+09     0.01   0.991            0           .
   BlackMale |   .7084892   .9976604    -0.24   0.807     .0448448     11.1932
  LatinoMale |   2.496574   1.002855     2.28   0.023     1.136118    5.486123
   OtherMale |   2.28e-06   .0019959    -0.01   0.988            0           .
------------------------------------------------------------------------------


--------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -311.41072
Iteration 1:   log likelihood = -274.78566
Iteration 2:   log likelihood = -273.40009
Iteration 3:   log likelihood = -273.22034
Iteration 4:   log likelihood =   -273.181
Iteration 5:   log likelihood = -273.17276
Iteration 6:   log likelihood =  -273.1714
Iteration 7:   log likelihood = -273.17108
Iteration 8:   log likelihood = -273.17101
Iteration 9:   log likelihood = -273.17099

Multinomial logistic regression                 Number of obs   =        286
                                                LR chi2(32)     =      76.48
                                                Prob > chi2     =     0.0000
Log likelihood = -273.17099                     Pseudo R2       =     0.1228

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
```

```
2            |
      tenure |   1.075995   .0277491     2.84   0.005      1.02296     1.13178
       exper |   .8701716   .0292194    -4.14   0.000     .8147465     .9293672
        male |    2.35351   .9535824     2.11   0.035     1.063728     5.207164
         age |   1.047153   .0285062     1.69   0.091      .992746     1.104541
pyacctrati~2 |   1.523267   .4342562     1.48   0.140     .8711917     2.663412
pyperstudlep |   1.009832   .0443537     0.22   0.824     .9265373     1.100615
pyperstude~s |   .9932241   .0213822    -0.32   0.752     .9521876     1.036029
pyperstudw~e |   .8887728   .0615507    -1.70   0.089     .7759648      1.01798
pyperstudb~k |   .9402442   .0665154    -0.87   0.384     .8185107     1.080083
pyperstudl~o |   .9149871   .0653678    -1.24   0.214     .7954339     1.052509
pyperstudm~e |   .9988243   .0258099    -0.05   0.964     .9494974     1.050714
       Asian |  (omitted)
       Black |   1.662395   1.473939     0.57   0.566     .2924344     9.450179
      Latino |   2.378522   1.662598     1.24   0.215     .6043844     9.360544
       Other |     552965   4.63e+08     0.02   0.987            0            .
   AsianMale |  (omitted)
   BlackMale |    1767073   1.19e+09     0.02   0.983            0            .
  LatinoMale |   1.141324   1.223034     0.12   0.902     .1397228     9.322883
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.024135   .0213204     1.15   0.252     .9831892     1.066787
       exper |   .9717762   .0303312    -0.92   0.359       .91411      1.03308
        male |   1.320171   .4789777     0.77   0.444     .6483385     2.688183
         age |   1.000475   .0277645     0.02   0.986     .9475112       1.0564
pyacctrati~2 |   1.852049   .4953668     2.30   0.021     1.096433     3.128405
pyperstudlep |   1.042324   .0392194     1.10   0.271     .9682213     1.122098
pyperstude~s |   1.027508   .0197263     1.41   0.158     .9895637     1.066908
pyperstudw~e |   .9921593   .0641816    -0.12   0.903     .8740135     1.126275
pyperstudb~k |   .9834503   .0652874    -0.25   0.802     .8634645     1.120109
pyperstudl~o |   .9754841    .064964    -0.37   0.709     .8561167     1.111495
pyperstudm~e |   .9873129   .0267965    -0.47   0.638     .9361652     1.041255
       Asian |  (omitted)
       Black |   1.829552   1.422874     0.78   0.437     .3984289     8.401151
      Latino |   1.911166   1.305406     0.95   0.343     .5010633     7.289613
       Other |    2736232   2.29e+09     0.02   0.986            0            .
   AsianMale |  (omitted)
   BlackMale |    1043530   7.00e+08     0.02   0.984            0            .
  LatinoMale |   1.559664   1.616735     0.43   0.668     .2044949     11.89542
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 4

Iteration 0:   log likelihood = -5276.2092
Iteration 1:   log likelihood = -4970.2098
Iteration 2:   log likelihood = -4956.6735
Iteration 3:   log likelihood = -4956.6122
Iteration 4:   log likelihood = -4956.6122

Multinomial logistic regression                 Number of obs   =       5116
                                                LR chi2(38)     =     639.19
                                                Prob > chi2     =     0.0000
Log likelihood = -4956.6122                     Pseudo R2       =     0.0606

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.028081   .0055185     5.16   0.000     1.017322    1.038954
       exper |   1.024862    .007066     3.56   0.000     1.011106    1.038806
        male |   1.099744   .1004153     1.04   0.298     .9195386    1.315264
         age |   .9651346   .0053766    -6.37   0.000      .954654    .9757302
```

```
pyacctrati~2 |   .9564739   .0524259    -0.81   0.417     .8590479    1.064949
pyperstudlep |   1.001409   .0029634     0.48   0.634     .9956182    1.007235
pyperstude~s |   .9949131   .0036139    -1.40   0.160     .9878552    1.002022
pyperstudw~e |   1.003085   .0053094     0.58   0.561     .9927325    1.013545
pyperstudb~k |   .9999815   .0066359    -0.00   0.998     .9870595    1.013073
pyperstudl~o |   1.005465   .0064238     0.85   0.394     .9929528    1.018134
pyperstudm~e |   1.008065   .0051648     1.57   0.117     .9979929    1.018239
       Asian |    .925537   .3564792    -0.20   0.841     .4350564    1.968983
       Black |   .8552201   .0881304    -1.52   0.129      .698814    1.046633
      Latino |    1.44233   .1830584     2.89   0.004     1.124686    1.849686
       Other |   .9091486   .3329661    -0.26   0.795     .4434976    1.863711
   AsianMale |   1.153461   .7582296     0.22   0.828     .3180269    4.183519
   BlackMale |   2.070095   .3431144     4.39   0.000     1.495909    2.864675
  LatinoMale |   1.062637   .2252295     0.29   0.774     .7014066    1.609904
   OtherMale |   1.250357   .9622407     0.29   0.772     .2766767    5.650613
-------------+----------------------------------------------------------------
3            |
      tenure |   1.043152   .0062865     7.01   0.000     1.030904    1.055547
       exper |   1.072496    .009481     7.92   0.000     1.054074    1.091241
        male |   1.216704   .1359557     1.76   0.079     .9773967    1.514604
         age |    .965663    .007315    -4.61   0.000     .9514318     .980107
pyacctrati~2 |   1.443816   .0949253     5.59   0.000     1.269254    1.642385
pyperstudlep |   1.013143   .0036771     3.60   0.000     1.005961    1.020375
pyperstude~s |   1.026952   .0047193     5.79   0.000     1.017744    1.036244
pyperstudw~e |   1.016358   .0070492     2.34   0.019     1.002635    1.030269
pyperstudb~k |    .997246   .0087722    -0.31   0.754     .9802001    1.014588
pyperstudl~o |   .9857205   .0082034    -1.73   0.084     .9697726    1.001931
pyperstudm~e |   .9982574    .007057    -0.25   0.805     .9845213    1.012185
       Asian |   .8657756   .4351653    -0.29   0.774       .32327    2.318704
       Black |   .4873916   .0682195    -5.13   0.000      .370456    .6412384
      Latino |   1.219612   .1902007     1.27   0.203     .8984112    1.655648
       Other |   .6932981   .3597785    -0.71   0.480     .2507261    1.917081
   AsianMale |   .3230491   .3874461    -0.94   0.346     .0307884    3.389609
   BlackMale |   2.081371    .462687     3.30   0.001     1.346257    3.217887
  LatinoMale |   1.244262   .3305872     0.82   0.411     .7391908    2.094435
   OtherMale |   1.506639   1.839461     0.34   0.737     .1376493     16.4909
------------------------------------------------------------------------------


---------->  region = 5

note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -492.80108
Iteration 1:   log likelihood = -447.26245
Iteration 2:   log likelihood = -445.36998
Iteration 3:   log likelihood = -445.03678
Iteration 4:   log likelihood = -444.98215
Iteration 5:   log likelihood = -444.96963
Iteration 6:   log likelihood =  -444.9666
Iteration 7:   log likelihood =   -444.966
Iteration 8:   log likelihood =  -444.9659
Iteration 9:   log likelihood = -444.96588

Multinomial logistic regression                 Number of obs   =        482
                                                LR chi2(36)     =      95.67
                                                Prob > chi2     =     0.0000
Log likelihood = -444.96588                     Pseudo R2       =     0.0971

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.02167   .0187368     1.17   0.242     .9855983    1.059061
       exper |   1.007563   .0264937     0.29   0.774     .9569518    1.060851
        male |   2.655277   .7586414     3.42   0.001     1.516745    4.648441
```

```
         age |   .9525199   .0209789    -2.21   0.027     .9122768    .9945382
pyacctrati~2 |   .9792178   .2369929    -0.09   0.931     .6093534    1.573582
pyperstudlep |   .9427666   .0366795    -1.51   0.130     .8735487    1.017469
pyperstude~s |   1.003198   .0101441     0.32   0.752     .9835119    1.023279
pyperstudw~e |   1.121698   .0700918     1.84   0.066     .9924001    1.267842
pyperstudb~k |    1.11663   .0711959     1.73   0.084     .9854556    1.265265
pyperstudl~o |   1.183842   .0988015     2.02   0.043     1.005203    1.394227
pyperstudm~e |    1.00091   .0284549     0.03   0.974     .9466646    1.058263
       Asian |   4.94e-07   .0008537    -0.01   0.993            0           .
       Black |   .9643787   .4323511    -0.08   0.936      .400531    2.321983
      Latino |   1.572657   1.914534     0.37   0.710     .1446745    17.09529
       Other |   1.707621   2.211908     0.41   0.680     .1348395    21.62549
   AsianMale |    1350763   2.33e+09     0.01   0.993            0           .
   BlackMale |   1.149623   .7124881     0.22   0.822     .3412056    3.873419
  LatinoMale |    1732810   1.56e+09     0.02   0.987            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.013618   .0159535     0.86   0.390     .9828268    1.045373
       exper |   1.078907   .0290688     2.82   0.005     1.023411    1.137412
        male |   2.411241   .6932396     3.06   0.002     1.372516    4.236077
         age |   .9510426    .022301    -2.14   0.032     .9083226    .9957717
pyacctrati~2 |   1.835878   .3917172     2.85   0.004     1.208439    2.789092
pyperstudlep |   .9580626   .0364865    -1.12   0.261     .8891541    1.032311
pyperstude~s |   1.019642   .0099606     1.99   0.046     1.000306    1.039353
pyperstudw~e |   1.065078   .0552962     1.21   0.225     .9620313    1.179163
pyperstudb~k |   1.046946     .05563     0.86   0.388     .9433987    1.161859
pyperstudl~o |   1.084951   .0765269     1.16   0.248     .9448672    1.245803
pyperstudm~e |   .9536106   .0289365    -1.57   0.117     .8985496    1.012046
       Asian |   7.19e-07   .0012318    -0.01   0.993            0           .
       Black |   2.759766    1.17452     2.39   0.017     1.198429    6.355246
      Latino |   2.17e-06   .0020512    -0.01   0.989            0           .
       Other |   2.52e-06   .0029342    -0.01   0.991            0           .
   AsianMale |   .7690078   1767.434    -0.00   1.000            0           .
   BlackMale |    .832984   .5095151    -0.30   0.765     .2511761    2.762453
  LatinoMale |   1.85e+12   2.41e+15     0.02   0.983            0           .
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 6

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -882.52151
Iteration 1:   log likelihood = -831.39381
Iteration 2:   log likelihood = -829.83189
Iteration 3:   log likelihood = -829.69892
Iteration 4:   log likelihood = -829.67207
Iteration 5:   log likelihood = -829.66644
Iteration 6:   log likelihood = -829.66517
Iteration 7:   log likelihood = -829.66486
Iteration 8:   log likelihood =  -829.6648
Iteration 9:   log likelihood = -829.66479

Multinomial logistic regression                 Number of obs   =        826
                                                LR chi2(36)     =     105.71
                                                Prob > chi2     =     0.0000
Log likelihood = -829.66479                     Pseudo R2       =     0.0599

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9890682     .01392    -0.78   0.435     .9621584    1.016731
       exper |   1.006654    .015784     0.42   0.672      .976189    1.038071
```

```
        male |   1.179576   .2290286     0.85   0.395     .8062225    1.725825
         age |    .975818   .0127253    -1.88   0.060      .951193    1.001081
pyacctrati~2 |   1.139633   .1516657     0.98   0.326     .8779798    1.479263
pyperstudlep |   1.021153   .0156254     1.37   0.171     .9909824    1.052242
pyperstude~s |   .9990644   .0070899    -0.13   0.895     .9852646    1.013058
pyperstudw~e |   1.042222   .0336924     1.28   0.201     .9782349    1.110395
pyperstudb~k |   1.038471   .0362579     1.08   0.280     .9697835    1.112023
pyperstudl~o |   1.031801   .0340054     0.95   0.342     .9672583     1.10065
pyperstudm~e |   .9940101   .0125537    -0.48   0.634     .9697074    1.018922
       Asian |   2.211764    3.23502     0.54   0.587     .1258157    38.88145
       Black |    1.16013   .5036391     0.34   0.732     .4954277    2.716644
      Latino |    .487756   .3380304    -1.04   0.300     .1253987    1.897197
       Other |   5.18e-07   .0006288    -0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   1.909269   1.349984     0.91   0.360     .4775399    7.633519
  LatinoMale |   .9099858   .8333559    -0.10   0.918     .1511864    5.477173
   OtherMale |    2670346   3.24e+09     0.01   0.990            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9979169   .0129807    -0.16   0.873     .9727968    1.023686
       exper |   1.077478   .0195105     4.12   0.000     1.039908    1.116404
        male |     2.2375   .4530674     3.98   0.000     1.504544    3.327525
         age |   .9563225   .0153282    -2.79   0.005     .9267467    .9868422
pyacctrati~2 |   1.667318   .2320524     3.67   0.000      1.26926    2.190212
pyperstudlep |   1.018603   .0163469     1.15   0.251     .9870622    1.051151
pyperstude~s |   1.027894   .0077043     3.67   0.000     1.012904    1.043105
pyperstudw~e |   1.017065   .0299108     0.58   0.565      .960098    1.077411
pyperstudb~k |   1.017492   .0316966     0.56   0.578     .9572259    1.081552
pyperstudl~o |    .989042   .0294897    -0.37   0.712     .9328996    1.048563
pyperstudm~e |   .9872202   .0168885    -0.75   0.452     .9546681    1.020882
       Asian |   4.67e-06   .0044635    -0.01   0.990            0           .
       Black |    1.20472   .5626899     0.40   0.690     .4822972    3.009247
      Latino |   1.152058   .7457792     0.22   0.827     .3239318    4.097279
       Other |   5.94e-07    .000716    -0.01   0.991            0           .
   AsianMale |  (omitted)
   BlackMale |   1.074731   .8228141     0.09   0.925     .2396735    4.819252
  LatinoMale |   .3182958   .2984379    -1.22   0.222     .0506681    1.999528
   OtherMale |   .8840361   1370.722    -0.00   1.000            0           .
------------------------------------------------------------------------------


--------->  region = 7

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1103.7188
Iteration 1:   log likelihood = -1037.5323
Iteration 2:   log likelihood = -1035.6844
Iteration 3:   log likelihood = -1035.6081
Iteration 4:   log likelihood = -1035.5964
Iteration 5:   log likelihood = -1035.5951
Iteration 6:   log likelihood = -1035.5949
Iteration 7:   log likelihood = -1035.5948
Iteration 8:   log likelihood = -1035.5948

Multinomial logistic regression                 Number of obs   =       1079
                                                LR chi2(34)     =     136.25
                                                Prob > chi2     =     0.0000
Log likelihood = -1035.5948                     Pseudo R2       =     0.0617

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9802481   .0121509    -1.61   0.108     .9567199    1.004355
```

```
       exper |   1.004118   .0149425     0.28   0.782     .9752545    1.033836
        male |   1.076635   .2032918     0.39   0.696     .7436066    1.558811
         age |   .9829062    .012481    -1.36   0.175     .9587459    1.007675
pyacctrati~2 |   .8410161   .1386238    -1.05   0.294     .6088378    1.161735
pyperstudlep |   .9796163   .0145354    -1.39   0.165     .9515377    1.008523
pyperstude~s |   .9912501   .0081114    -1.07   0.283     .9754789    1.007276
pyperstudw~e |   .9035384   .0851775    -1.08   0.282      .751109    1.086902
pyperstudb~k |   .9045985   .0866512    -1.05   0.295     .7497553    1.091421
pyperstudl~o |   .9271687    .088736    -0.79   0.429     .7685874     1.11847
pyperstudm~e |   .9906734   .0128232    -0.72   0.469     .9658565    1.016128
       Asian |  (omitted)
       Black |   1.200705   .4163713     0.53   0.598     .6085033    2.369242
      Latino |   .5840457   .6497638    -0.48   0.629     .0659882    5.169248
       Other |   .3962869   .4335717    -0.85   0.398     .0464219     3.38296
   AsianMale |  (omitted)
   BlackMale |   2.377941   1.166451     1.77   0.077     .9092039    6.219289
  LatinoMale |    2.73543    3.50778     0.78   0.433     .2215578    33.77258
   OtherMale |   5.64e-06   .0047426    -0.01   0.989            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9880647   .0099095    -1.20   0.231     .9688321    1.007679
       exper |   1.053151   .0145117     3.76   0.000      1.02509    1.081981
        male |   1.582954   .2696744     2.70   0.007     1.133591    2.210447
         age |   .9819259   .0122186    -1.47   0.143     .9582677    1.006168
pyacctrati~2 |   1.606992   .2281898     3.34   0.001     1.216591    2.122671
pyperstudlep |   1.025571   .0149571     1.73   0.083      .996671     1.05531
pyperstude~s |   1.028813    .007474     3.91   0.000     1.014268    1.043567
pyperstudw~e |   .8742277   .0780309    -1.51   0.132     .7339204    1.041358
pyperstudb~k |   .8632521   .0782455    -1.62   0.105     .7227439    1.031076
pyperstudl~o |   .8494444   .0772398    -1.79   0.073     .7107803     1.01516
pyperstudm~e |   .9836457   .0120057    -1.35   0.177     .9603942     1.00746
       Asian |  (omitted)
       Black |   1.208483    .390519     0.59   0.558     .6414699    2.276694
      Latino |   1.238323   .9330768     0.28   0.777      .282783    5.422687
       Other |   .4364365   .4821012    -0.75   0.453     .0500792     3.80351
   AsianMale |  (omitted)
   BlackMale |   1.660824   .7792487     1.08   0.280     .6621327    4.165837
  LatinoMale |   .7007556   .7132973    -0.35   0.727     .0953083    5.152315
   OtherMale |   3.15e-06   .0021755    -0.02   0.985            0           .
------------------------------------------------------------------------------


--------->  region = 8

note: AsianMale omitted because of collinearity
note: LatinoMale omitted because of collinearity
Iteration 0:   log likelihood = -390.52114
Iteration 1:   log likelihood = -346.69628
Iteration 2:   log likelihood = -344.63841
Iteration 3:   log likelihood =  -344.4943
Iteration 4:   log likelihood = -344.46174
Iteration 5:   log likelihood = -344.45418
Iteration 6:   log likelihood = -344.45261
Iteration 7:   log likelihood = -344.45234
Iteration 8:   log likelihood = -344.45231

Multinomial logistic regression                 Number of obs   =        374
                                                LR chi2(34)     =      92.14
                                                Prob > chi2     =     0.0000
Log likelihood = -344.45231                     Pseudo R2       =     0.1180

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
```

```
      tenure |   1.026785   .0243902     1.11   0.266     .9800773     1.07572
       exper |   .9895176   .0295855    -0.35   0.725     .9331974    1.049237
        male |   3.180172   1.099246     3.35   0.001     1.615204    6.261431
         age |   .9674479   .0259005    -1.24   0.216     .9179928    1.019567
pyacctrati~2 |   1.331335   .3890777     0.98   0.327     .7508042    2.360738
pyperstudlep |   1.016138   .0343343     0.47   0.636     .9510241    1.085711
pyperstude~s |   .9772561   .0135071    -1.66   0.096     .9511379    1.004091
pyperstudw~e |   1.054815   .1571607     0.36   0.720     .7876856    1.412537
pyperstudb~k |   1.111253   .1675534     0.70   0.484     .8269324    1.493332
pyperstudl~o |   1.071401   .1638356     0.45   0.652     .7939414    1.445823
pyperstudm~e |   .9651693   .0341944    -1.00   0.317     .9004235    1.034571
       Asian |   1.685138   4532.463     0.00   1.000            0           .
       Black |   3.493981    1.89391     2.31   0.021     1.207612    10.10913
      Latino |    3157121   1.69e+09     0.03   0.978            0           .
       Other |    6.21076   8.139393     1.39   0.163      .476013    81.03463
   AsianMale |  (omitted)
   BlackMale |   1.077823   1.373665     0.06   0.953     .0886557    13.10352
  LatinoMale |  (omitted)
   OtherMale |   1.06e-07   .0001703    -0.01   0.992            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9949227   .0182491    -0.28   0.781     .9597904    1.031341
       exper |   .9983678   .0227151    -0.07   0.943     .9548251    1.043896
        male |   2.634385    .754642     3.38   0.001     1.502607     4.61863
         age |   1.020593   .0222916     0.93   0.351     .9778238    1.065232
pyacctrati~2 |   2.245745   .5627183     3.23   0.001     1.374277    3.669837
pyperstudlep |   1.007357    .032858     0.22   0.822     .9449715     1.07386
pyperstude~s |   1.034942   .0117525     3.02   0.002     1.012162    1.058235
pyperstudw~e |   1.056854   .1189329     0.49   0.623     .8476671    1.317665
pyperstudb~k |   1.045447   .1177807     0.39   0.693      .838311    1.303764
pyperstudl~o |   1.029416   .1177876     0.25   0.800     .8226114     1.28821
pyperstudm~e |   1.015281   .0216736     0.71   0.477     .9736783    1.058662
       Asian |   717158.7   1.06e+09     0.01   0.993            0           .
       Black |   1.873434   1.061556     1.11   0.268     .6170444     5.68801
      Latino |    1146072   6.15e+08     0.03   0.979            0           .
       Other |   6.010256   7.623059     1.41   0.157     .5003553    72.19506
   AsianMale |  (omitted)
   BlackMale |   1.842559   2.434457     0.46   0.644     .1382872    24.55051
  LatinoMale |  (omitted)
   OtherMale |   1.14e-07   .0001463    -0.01   0.990            0           .
------------------------------------------------------------------------------


--------->  region = 9

note: AsianMale omitted because of collinearity
note: LatinoMale omitted because of collinearity
Iteration 0:   log likelihood = -212.83237
Iteration 1:   log likelihood =  -191.3347
Iteration 2:   log likelihood = -190.48847
Iteration 3:   log likelihood = -189.64615
Iteration 4:   log likelihood = -189.58673
Iteration 5:   log likelihood =  -189.5764
Iteration 6:   log likelihood = -189.57407
Iteration 7:   log likelihood =  -189.5735
Iteration 8:   log likelihood = -189.57339
Iteration 9:   log likelihood = -189.57337
Iteration 10:  log likelihood = -189.57337

Multinomial logistic regression                 Number of obs   =        201
                                                LR chi2(34)     =      46.52
                                                Prob > chi2     =     0.0746
Log likelihood = -189.57337                     Pseudo R2       =     0.1093

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
```

```
1             |
      tenure |   1.008883   .0247019     0.36   0.718     .9616113    1.058478
       exper |    .981792   .0356091    -0.51   0.612     .9144223    1.054125
        male |   .8405395   .3125603    -0.47   0.640     .4055394     1.74214
         age |   .9826863   .0315775    -0.54   0.587     .9227043    1.046568
pyacctrati~2 |   .7994681   .2425626    -0.74   0.461     .4411054    1.448972
pyperstudlep |   .9817811   .0672661    -0.27   0.788     .8584108    1.122882
pyperstude~s |   .9809746   .0152605    -1.23   0.217      .951516    1.011345
pyperstudw~e |   .8239055   .0949759    -1.68   0.093     .6572869    1.032761
pyperstudb~k |   .8228838   .0990439    -1.62   0.105     .6499594    1.041816
pyperstudl~o |   .8507765   .1016271    -1.35   0.176       .67319     1.07521
pyperstudm~e |   .9923411   .0337131    -0.23   0.821     .9284164    1.060667
       Asian |   1.223755   22496.48     0.00   1.000            0           .
       Black |   1.20e-07   .0003021    -0.01   0.995            0           .
      Latino |   4.02e-08   .0002188    -0.00   0.998            0           .
       Other |   .8001513   14709.31    -0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   1.77e+14   9.05e+17     0.01   0.995            0           .
  LatinoMale |  (omitted)
   OtherMale |   9.01e-08   .0016856    -0.00   0.999            0           .
-------------+----------------------------------------------------------------
2             |
      tenure |   .9749348    .030447    -0.81   0.416     .9170494    1.036474
       exper |   .9948941   .0434015    -0.12   0.907     .9133638    1.083702
        male |   .4719848   .2168488    -1.63   0.102     .1918014     1.16146
         age |   .9875146   .0365265    -0.34   0.734     .9184574    1.061764
pyacctrati~2 |   .7991891   .3131284    -0.57   0.567     .3708022     1.72249
pyperstudlep |   .9605155   .0910027    -0.43   0.671     .7977347    1.156512
pyperstude~s |   .9649929   .0197605    -1.74   0.082     .9270298    1.004511
pyperstudw~e |   .7422941    .101738    -2.17   0.030     .5674287     .971048
pyperstudb~k |   .7775124   .1097132    -1.78   0.075     .5896523    1.025224
pyperstudl~o |    .779444   .1117941    -1.74   0.082     .5884353    1.032455
pyperstudm~e |   1.004716   .0432245     0.11   0.913     .9234714    1.093109
       Asian |   8.41e+08   1.03e+13     0.00   0.999            0           .
       Black |   .3819056   .5454507    -0.67   0.500     .0232402    6.275831
      Latino |   1.15e-07   .0007967    -0.00   0.998            0           .
       Other |   4.39e+08   5.37e+12     0.00   0.999            0           .
   AsianMale |  (omitted)
   BlackMale |   2.46e+08   1.09e+12     0.00   0.997            0           .
  LatinoMale |  (omitted)
   OtherMale |   3.12e-09   .0000382    -0.00   0.999            0           .
-------------+----------------------------------------------------------------
3             |  (base outcome)
------------------------------------------------------------------------------


---------->  region = 10

Iteration 0:   log likelihood = -3788.3914
Iteration 1:   log likelihood = -3528.4081
Iteration 2:   log likelihood = -3520.4742
Iteration 3:   log likelihood = -3520.4481
Iteration 4:   log likelihood = -3520.4481

Multinomial logistic regression                 Number of obs   =       3548
                                                LR chi2(38)     =     535.89
                                                Prob > chi2     =     0.0000
Log likelihood = -3520.4481                     Pseudo R2       =     0.0707

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1             |  (base outcome)
-------------+----------------------------------------------------------------
2             |
      tenure |   1.021348   .0066877     3.23   0.001     1.008324     1.03454
       exper |   1.019714   .0084023     2.37   0.018     1.003378    1.036316
```

```
        male |   1.465644    .156257     3.59   0.000     1.189266    1.806249
         age |   .9595289   .0064344    -6.16   0.000     .9470002    .9722233
pyacctrati~2 |   1.004303   .0652189     0.07   0.947     .8842765    1.140621
pyperstudlep |   1.013266   .0047358     2.82   0.005     1.004026    1.022591
pyperstude~s |   .9885552   .0036878    -3.09   0.002     .9813536    .9958096
pyperstudw~e |   .9917196   .0079215    -1.04   0.298     .9763147    1.007368
pyperstudb~k |   .9972153   .0087135    -0.32   0.750     .9802826    1.014441
pyperstudl~o |   .9945233   .0084785    -0.64   0.519     .9780438     1.01128
pyperstudm~e |   1.004242   .0068771     0.62   0.536     .9908536    1.017812
       Asian |   1.474652    .872192     0.66   0.511     .4626377    4.700434
       Black |   1.022031   .1355655     0.16   0.870     .7880573    1.325471
      Latino |   1.574717   .2918785     2.45   0.014     1.095039    2.264515
       Other |   1.175326   .5214454     0.36   0.716      .492622    2.804159
   AsianMale |   1.376997   1.316069     0.33   0.738     .2115413    8.963365
   BlackMale |   1.387878   .2967644     1.53   0.125       .91273    2.110379
  LatinoMale |   1.359046   .3900886     1.07   0.285     .7743064    2.385369
   OtherMale |   1.055275   .6876383     0.08   0.934      .294243    3.784649
-------------+----------------------------------------------------------------
3            |
      tenure |   1.023755   .0065433     3.67   0.000      1.01101     1.03666
       exper |   1.091633   .0106703     8.97   0.000     1.070919    1.112748
        male |   1.404794    .167592     2.85   0.004     1.111896    1.774847
         age |    .955016   .0082278    -5.34   0.000     .9390251    .9712791
pyacctrati~2 |   1.592822   .1134752     6.53   0.000     1.385244    1.831505
pyperstudlep |    1.02381   .0055667     4.33   0.000     1.012957    1.034779
pyperstude~s |    1.01353   .0040475     3.37   0.001     1.005628    1.021494
pyperstudw~e |    1.00336   .0087121     0.39   0.699     .9864295    1.020582
pyperstudb~k |   .9925291   .0096195    -0.77   0.439     .9738532    1.011563
pyperstudl~o |   .9764093   .0090354    -2.58   0.010       .95886    .9942799
pyperstudm~e |   .9965292   .0081337    -0.43   0.670     .9807143    1.012599
       Asian |   1.702163   1.158238     0.78   0.434     .4485392    6.459542
       Black |   .8842023   .1446279    -0.75   0.452     .6416847    1.218377
      Latino |   2.162152   .4388458     3.80   0.000     1.452514     3.21849
       Other |   .7642855   .4244902    -0.48   0.628     .2573307    2.269967
   AsianMale |   .8513866   1.008741    -0.14   0.892     .0834843    8.682575
   BlackMale |   2.247499   .5652906     3.22   0.001     1.372794    3.679541
  LatinoMale |   1.616329   .5121569     1.52   0.130     .8685891    3.007773
   OtherMale |   .9773765   .8323886    -0.03   0.979     .1841327    5.187915
------------------------------------------------------------------------------


--------->  region = 11

Iteration 0:   log likelihood = -2784.7995
Iteration 1:   log likelihood = -2633.0779
Iteration 2:   log likelihood = -2629.4708
Iteration 3:   log likelihood = -2629.3502
Iteration 4:   log likelihood = -2629.3212
Iteration 5:   log likelihood = -2629.3157
Iteration 6:   log likelihood = -2629.3149
Iteration 7:   log likelihood = -2629.3146
Iteration 8:   log likelihood = -2629.3146
Iteration 9:   log likelihood = -2629.3146

Multinomial logistic regression                 Number of obs   =       2586
                                                LR chi2(38)     =     310.97
                                                Prob > chi2     =     0.0000
Log likelihood = -2629.3146                     Pseudo R2       =     0.0558

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |     1.0034   .0078134     0.44   0.663     .9882025    1.018832
       exper |   1.009347    .008763     1.07   0.284     .9923166    1.026669
```

```
        male |   1.357486   .1498216     2.77   0.006      1.09343    1.685311
         age |   .9743611    .006808    -3.72   0.000     .9611086    .9877963
pyacctrati~2 |   1.061091   .0839817     0.75   0.454     .9086213    1.239146
pyperstudlep |   .9969099   .0059316    -0.52   0.603     .9853518    1.008604
pyperstude~s |   1.001956   .0039074     0.50   0.616     .9943266    1.009643
pyperstudw~e |   .9918522   .0111364    -0.73   0.466     .9702637    1.013921
pyperstudb~k |   .9927829   .0124291    -0.58   0.563     .9687189    1.017445
pyperstudl~o |   .9937859    .011862    -0.52   0.602     .9708066    1.017309
pyperstudm~e |   .9978941   .0074434    -0.28   0.777     .9834113     1.01259
       Asian |   .5801983   .4898994    -0.64   0.519     .1108795    3.035999
       Black |   1.446105   .2757075     1.93   0.053     .9952081    2.101289
      Latino |   1.763416   .4203776     2.38   0.017     1.105194    2.813658
       Other |   .2925936   .1869601    -1.92   0.054     .0836312    1.023674
   AsianMale |    1301652   8.38e+08     0.02   0.983            0           .
   BlackMale |   1.005584   .3199507     0.02   0.986     .5389996    1.876068
  LatinoMale |   1.037744   .3716534     0.10   0.918      .514333    2.093804
   OtherMale |   2.930993   2.559206     1.23   0.218     .5294014    16.22723
-------------+----------------------------------------------------------------
3            |
      tenure |   1.003782   .0075515     0.50   0.616     .9890901    1.018692
       exper |   1.063605   .0100707     6.51   0.000     1.044049    1.083528
        male |   1.520871   .1875357     3.40   0.001     1.194352    1.936655
         age |   .9930973   .0080661    -0.85   0.394     .9774132    1.009033
pyacctrati~2 |   1.599633   .1383967     5.43   0.000     1.350132    1.895241
pyperstudlep |   1.023564   .0070375     3.39   0.001     1.009863     1.03745
pyperstude~s |   1.020672   .0045963     4.54   0.000     1.011703     1.02972
pyperstudw~e |   1.008239   .0130564     0.63   0.526     .9829712    1.034157
pyperstudb~k |   .9970014   .0146554    -0.20   0.838     .9686872    1.026143
pyperstudl~o |   .9827067   .0136968    -1.25   0.211     .9562248    1.009922
pyperstudm~e |   .9901727   .0093098    -1.05   0.294     .9720928    1.008589
       Asian |   .8294859   .7199488    -0.22   0.829     .1513604    4.545753
       Black |   1.413623   .3224849     1.52   0.129     .9039661    2.210626
      Latino |   1.792453   .4763562     2.20   0.028      1.06472     3.01759
       Other |   .5176695   .3076447    -1.11   0.268     .1615079    1.659248
   AsianMale |    1425770   9.18e+08     0.02   0.982            0           .
   BlackMale |   1.088877   .4259108     0.22   0.828     .5058645    2.343817
  LatinoMale |   .8416599   .3490415    -0.42   0.678     .3733689    1.897296
   OtherMale |   1.023973   .9668766     0.03   0.980     .1608978    6.516692
------------------------------------------------------------------------------


---------->  region = 12

Iteration 0:   log likelihood = -909.92092
Iteration 1:   log likelihood = -847.24344
Iteration 2:   log likelihood = -845.60814
Iteration 3:   log likelihood = -845.36476
Iteration 4:   log likelihood = -845.31112
Iteration 5:   log likelihood = -845.29984
Iteration 6:   log likelihood = -845.29756
Iteration 7:   log likelihood = -845.29703
Iteration 8:   log likelihood = -845.29691
Iteration 9:   log likelihood = -845.29688

Multinomial logistic regression                 Number of obs   =        839
                                                LR chi2(38)     =     129.25
                                                Prob > chi2     =     0.0000
Log likelihood = -845.29688                     Pseudo R2       =     0.0710

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9923625   .0122426    -0.62   0.534     .9686551     1.01665
       exper |   1.040852   .0178145     2.34   0.019     1.006516     1.07636
```

```
        male |   .8036054   .1661821    -1.06   0.290     .5358189    1.205224
         age |   .9657011   .0143782    -2.34   0.019     .9379275    .9942971
pyacctrati~2 |   1.258264   .1921926     1.50   0.133     .9327298    1.697415
pyperstudlep |   .9913336   .0173678    -0.50   0.619     .9578712    1.025965
pyperstude~s |   .9873406   .0082269    -1.53   0.126      .971347    1.003597
pyperstudw~e |    .935273   .0529535    -1.18   0.237     .8370374    1.045038
pyperstudb~k |   .9536456   .0573064    -0.79   0.430     .8476892    1.072846
pyperstudl~o |   .9648227   .0546734    -0.63   0.527     .8634011    1.078158
pyperstudm~e |   1.025138   .0131895     1.93   0.054       .99961    1.051317
       Asian |   9.36e-07    .000713    -0.02   0.985            0           .
       Black |   .8389588   .2862097    -0.51   0.607      .429887    1.637295
      Latino |   .7539297   .3931714    -0.54   0.588     .2712893    2.095217
       Other |   .2130537   .2419033    -1.36   0.173     .0230158    1.972204
   AsianMale |    3639210   2.77e+09     0.02   0.984            0           .
   BlackMale |   3.521706   2.106523     2.10   0.035     1.090444    11.37373
  LatinoMale |   2.496533   1.964824     1.16   0.245     .5338557    11.67484
   OtherMale |   2.48e+07   1.99e+10     0.02   0.983            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9955513   .0114069    -0.39   0.697     .9734433    1.018161
       exper |   1.026085   .0161147     1.64   0.101     .9949816     1.05816
        male |   1.282042   .2549959     1.25   0.212     .8681599    1.893236
         age |   1.006523   .0140372     0.47   0.641      .979383    1.034415
pyacctrati~2 |   1.819183    .262853     4.14   0.000     1.370524    2.414716
pyperstudlep |   1.021264   .0179568     1.20   0.231     .9866688    1.057072
pyperstude~s |    1.01143   .0080541     1.43   0.154     .9957666    1.027339
pyperstudw~e |   1.076433   .0630844     1.26   0.209     .9596266    1.207457
pyperstudb~k |   1.068466   .0661571     1.07   0.285     .9463597    1.206328
pyperstudl~o |   1.061835   .0624238     1.02   0.307     .9462719     1.19151
pyperstudm~e |   1.005371    .013767     0.39   0.696     .9787476     1.03272
       Asian |    .851419   1.089466    -0.13   0.900     .0693356    10.45516
       Black |   1.342998   .5000435     0.79   0.428     .6473576    2.786162
      Latino |   .5940224    .415738    -0.74   0.457     .1506861    2.341707
       Other |   .8724124     .76571    -0.16   0.876     .1561811    4.873211
   AsianMale |   2.17e-06   .0018944    -0.01   0.988            0           .
   BlackMale |   2.128935   1.321471     1.22   0.223     .6306745    7.186538
  LatinoMale |   4.067108   3.828111     1.49   0.136     .6428411    25.73166
   OtherMale |    1190093   9.56e+08     0.02   0.986            0           .
------------------------------------------------------------------------------


--------->  region = 13

Iteration 0:   log likelihood = -1634.1713
Iteration 1:   log likelihood = -1530.2007
Iteration 2:   log likelihood = -1528.5208
Iteration 3:   log likelihood = -1528.4722
Iteration 4:   log likelihood = -1528.4646
Iteration 5:   log likelihood = -1528.4628
Iteration 6:   log likelihood = -1528.4624
Iteration 7:   log likelihood = -1528.4623
Iteration 8:   log likelihood = -1528.4623

Multinomial logistic regression                 Number of obs   =       1499
                                                LR chi2(38)     =     211.42
                                                Prob > chi2     =     0.0000
Log likelihood = -1528.4623                     Pseudo R2       =     0.0647

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.008685   .0106945     0.82   0.415     .9879402    1.029865
       exper |   .9774832   .0107964    -2.06   0.039       .95655    .9988745
        male |   1.106348   .1750634     0.64   0.523     .8113373    1.508627
```

```
         age |   .9698202   .0091346    -3.25   0.001     .9520808      .98789
pyacctrati~2 |   1.033874   .1137436     0.30   0.762     .8333379    1.282668
pyperstudlep |   .9986489   .0073992    -0.18   0.855     .9842515    1.013257
pyperstude~s |   .9943725   .0070675    -0.79   0.427     .9806164    1.008322
pyperstudw~e |   .9651599   .0170483    -2.01   0.045     .9323177    .9991591
pyperstudb~k |   .9711439    .020947    -1.36   0.175     .9309442    1.013079
pyperstudl~o |   .9751855   .0184926    -1.33   0.185     .9396059    1.012112
pyperstudm~e |   1.001422   .0090163     0.16   0.875     .9839051     1.01925
       Asian |   5.398266   6.105324     1.49   0.136     .5882519    49.53877
       Black |     1.6798   .4440033     1.96   0.050     1.000619    2.819982
      Latino |   2.357272   .5476327     3.69   0.000      1.49507    3.716701
       Other |   3.678121   4.156841     1.15   0.249     .4014559    33.69879
   AsianMale |   .1138144   .2078195    -1.19   0.234     .0031765    4.078015
   BlackMale |   1.129462    .559332     0.25   0.806     .4278977    2.981285
  LatinoMale |     1.1296   .4395339     0.31   0.754     .5268865    2.421766
   OtherMale |   .2756537    .370586    -0.96   0.338     .0197705    3.843355
-------------+----------------------------------------------------------------
3            |
      tenure |   1.028126    .010148     2.81   0.005     1.008427    1.048209
       exper |   1.030723   .0121203     2.57   0.010      1.00724    1.054754
        male |   .9010956   .1494215    -0.63   0.530     .6510629     1.24715
         age |   .9818607   .0103245    -1.74   0.082     .9618322    1.002306
pyacctrati~2 |   1.449102   .1702673     3.16   0.002     1.151023    1.824374
pyperstudlep |   .9940002   .0077828    -0.77   0.442     .9788626    1.009372
pyperstude~s |   1.018039   .0074584     2.44   0.015     1.003525    1.032762
pyperstudw~e |   .9731626   .0188348    -1.41   0.160     .9369384    1.010787
pyperstudb~k |   .9767193   .0230213    -1.00   0.318     .9326248    1.022899
pyperstudl~o |   .9719886   .0200612    -1.38   0.169      .933454    1.012114
pyperstudm~e |   .9783682   .0115252    -1.86   0.063     .9560379     1.00122
       Asian |   3.914588   4.554964     1.17   0.241     .4001649    38.29422
       Black |   .4016152   .1464152    -2.50   0.012     .1965581    .8205958
      Latino |   1.249375   .3197785     0.87   0.384     .7565318    2.063282
       Other |   4.498746   5.258698     1.29   0.198     .4550934    44.47157
   AsianMale |   3.05e-06   .0013437    -0.03   0.977            0           .
   BlackMale |   3.140304    1.92546     1.87   0.062     .9441961    10.44434
  LatinoMale |   2.032743   .8632377     1.67   0.095     .8843127    4.672606
   OtherMale |   .1936018   .2833333    -1.12   0.262     .0109948    3.409026
------------------------------------------------------------------------------


---------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -255.93437
Iteration 1:   log likelihood = -229.85445
Iteration 2:   log likelihood = -226.97003
Iteration 3:   log likelihood = -226.33104
Iteration 4:   log likelihood = -226.29046
Iteration 5:   log likelihood = -226.28355
Iteration 6:   log likelihood = -226.28197
Iteration 7:   log likelihood =  -226.2816
Iteration 8:   log likelihood = -226.28152
Iteration 9:   log likelihood = -226.28151

Multinomial logistic regression                 Number of obs   =        257
                                                LR chi2(32)     =      59.31
                                                Prob > chi2     =     0.0023
Log likelihood = -226.28151                     Pseudo R2       =     0.1159

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
```

```
      tenure |    1.01741   .0316839     0.55   0.579      .957168    1.081444
       exper |   1.008852   .0405751     0.22   0.827     .9323802    1.091596
        male |   1.562747   .7259933     0.96   0.337     .6287129    3.884408
         age |   1.002999   .0365796     0.08   0.935     .9338071    1.077319
pyacctrati~2 |   .8270188   .3276385    -0.48   0.632     .3804491    1.797771
pyperstudlep |   1.078152   .1026485     0.79   0.429     .8946203    1.299334
pyperstude~s |   .9909184   .0196508    -0.46   0.645     .9531425    1.030192
pyperstudw~e |   .8325945   .2427783    -0.63   0.530     .4701425    1.474475
pyperstudb~k |   .7969001   .2501295    -0.72   0.469      .430755    1.474271
pyperstudl~o |   .8468617    .243888    -0.58   0.564     .4815869    1.489191
pyperstudm~e |    1.00972   .0314572     0.31   0.756     .9499093    1.073296
       Asian |  (omitted)
       Black |   1.75e+07   2.72e+10     0.01   0.991            0           .
      Latino |   2.83e-06   .0032815    -0.01   0.991            0           .
       Other |   4.030442   6.199712     0.91   0.365     .1977044    82.16541
   AsianMale |  (omitted)
   BlackMale |   1.03e-07   .0003819    -0.00   0.997            0           .
  LatinoMale |    4035030   4.68e+09     0.01   0.990            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.003098   .0216289     0.14   0.886     .9615894    1.046398
       exper |   1.044263   .0299574     1.51   0.131     .9871674     1.10466
        male |   2.662615   .8791991     2.97   0.003     1.393929    5.085999
         age |   .9949266   .0253699    -0.20   0.842     .9464246    1.045914
pyacctrati~2 |   1.479697   .3994219     1.45   0.147     .8717734     2.51155
pyperstudlep |   1.117561   .0722803     1.72   0.086      .984506    1.268599
pyperstude~s |   1.017879   .0133167     1.35   0.176     .9921107    1.044317
pyperstudw~e |   1.037453    .211892     0.18   0.857     .6952118    1.548175
pyperstudb~k |   .9721206   .2127067    -0.13   0.897     .6330987    1.492687
pyperstudl~o |   1.046436   .2110404     0.23   0.822     .7047678    1.553742
pyperstudm~e |   .9848224   .0250647    -0.60   0.548     .9369016    1.035194
       Asian |  (omitted)
       Black |    7429339   1.16e+10     0.01   0.992            0           .
      Latino |   3.756357    4.66192     1.07   0.286     .3298846    42.77319
       Other |   .9164823   1.433656    -0.06   0.956     .0427157     19.6635
   AsianMale |  (omitted)
   BlackMale |   .4620364   1038.481    -0.00   1.000            0           .
  LatinoMale |    .496143   .7733054    -0.45   0.653     .0233827    10.52734
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 15

note: Asian omitted because of collinearity
note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -286.86545
Iteration 1:   log likelihood = -263.30984
Iteration 2:   log likelihood = -261.77967
Iteration 3:   log likelihood = -261.75364
Iteration 4:   log likelihood = -261.75009
Iteration 5:   log likelihood = -261.74947
Iteration 6:   log likelihood = -261.74933
Iteration 7:   log likelihood = -261.74929
Iteration 8:   log likelihood = -261.74929

Multinomial logistic regression                 Number of obs   =        276
                                                LR chi2(30)     =      50.23
                                                Prob > chi2     =     0.0117
Log likelihood = -261.74929                     Pseudo R2       =     0.0876

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
```

```
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.066515   .0364706     1.88   0.060     .9973763    1.140446
       exper |   .9319033   .0336131    -1.96   0.051     .8682977    1.000168
        male |   1.415279   .6546325     0.75   0.453     .5716387    3.503987
         age |   1.015902   .0265234     0.60   0.546     .9652252     1.06924
pyacctrati~2 |   .5813986   .2064462    -1.53   0.127     .2898843    1.166066
pyperstudlep |   .9681011   .0337911    -0.93   0.353     .9040864    1.036649
pyperstude~s |   1.013429    .016424     0.82   0.410     .9817446    1.046136
pyperstudw~e |   .8682212   .2343689    -0.52   0.601      .511512    1.473686
pyperstudb~k |   .9257482    .264932    -0.27   0.787     .5283172     1.62215
pyperstudl~o |   .8649255   .2351371    -0.53   0.593     .5076596    1.473618
pyperstudm~e |    .980838   .0313746    -0.60   0.545      .921233      1.0443
       Asian |  (omitted)
       Black |   1.07e+07   1.31e+10     0.01   0.989            0           .
      Latino |   3.550699    2.07576     2.17   0.030     1.129006    11.16687
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   5.49e-07   .0006731    -0.01   0.991            0           .
  LatinoMale |   .8075745   .6599843    -0.26   0.794     .1627588    4.007013
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9741226   .0191349    -1.33   0.182     .9373316    1.012358
       exper |   1.048028   .0257425     1.91   0.056     .9987686    1.099716
        male |   .9040142   .2941738    -0.31   0.756     .4777351    1.710659
         age |   .9953251   .0224992    -0.21   0.836     .9521901    1.040414
pyacctrati~2 |   1.289076   .2964874     1.10   0.270     .8213003    2.023274
pyperstudlep |   1.009905   .0286073     0.35   0.728     .9553635     1.06756
pyperstude~s |   1.016344   .0122945     1.34   0.180     .9925306    1.040729
pyperstudw~e |   .9973852   .1950462    -0.01   0.989     .6798358    1.463261
pyperstudb~k |   1.039757   .2171388     0.19   0.852     .6905102    1.565646
pyperstudl~o |    .988651   .1939818    -0.06   0.954     .6730231    1.452299
pyperstudm~e |   .9714734   .0249477    -1.13   0.260     .9237869    1.021621
       Asian |  (omitted)
       Black |   1.385148   2516.989     0.00   1.000            0           .
      Latino |   .8026128   .4260471    -0.41   0.679     .2835743     2.27167
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   1.024447    1861.55     0.00   1.000            0           .
  LatinoMale |   1.840172   1.414833     0.79   0.428     .4077598    8.304478
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 16

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -534.44334
Iteration 1:   log likelihood = -494.76016
Iteration 2:   log likelihood = -493.57752
Iteration 3:   log likelihood =   -493.498
Iteration 4:   log likelihood = -493.48575
Iteration 5:   log likelihood = -493.48279
Iteration 6:   log likelihood = -493.48216
Iteration 7:   log likelihood = -493.48202
Iteration 8:   log likelihood = -493.48199

Multinomial logistic regression                 Number of obs   =        492
                                                LR chi2(34)     =      81.92
                                                Prob > chi2     =     0.0000
Log likelihood = -493.48199                     Pseudo R2       =     0.0766

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
```

```
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.044386   .0212426     2.14   0.033     1.003571    1.086862
       exper |    .958234   .0244738    -1.67   0.095      .911447    1.007423
        male |   .8817168    .232552    -0.48   0.633     .5258059    1.478539
         age |   .9721568   .0201153    -1.36   0.172     .9335202    1.012392
pyacctrati~2 |   .9422033   .1898865    -0.30   0.768     .6347433    1.398592
pyperstudlep |   1.016007   .0166476     0.97   0.332     .9838962    1.049165
pyperstude~s |   .9821423   .0085544    -2.07   0.039     .9655183    .9990526
pyperstudw~e |   .9450086   .0338828    -1.58   0.115     .8808793    1.013807
pyperstudb~k |   .9714633   .0391886    -0.72   0.473      .897613    1.051389
pyperstudl~o |   .9542162    .033311    -1.34   0.179     .8911112     1.02179
pyperstudm~e |   .9998232   .0105669    -0.02   0.987     .9793255     1.02075
       Asian |  (omitted)
       Black |   .7135945   .7228972    -0.33   0.739     .0979836    5.196963
      Latino |   2.476497   1.397719     1.61   0.108     .8192665    7.486011
       Other |   1.685438   1.812926     0.49   0.627     .2047037    13.87714
   AsianMale |  (omitted)
   BlackMale |    .000013   .0056439    -0.03   0.979            0           .
  LatinoMale |   .6681335   .6491099    -0.42   0.678     .0995171    4.485685
   OtherMale |    3280409   2.64e+09     0.02   0.985            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.028578   .0168474     1.72   0.085     .9960823    1.062134
       exper |   .9974883   .0205616    -0.12   0.903     .9579914    1.038614
        male |   2.112691   .5205149     3.04   0.002      1.30353    3.424137
         age |   1.006296   .0191373     0.33   0.741     .9694777    1.044512
pyacctrati~2 |   1.444244   .2665976     1.99   0.046     1.005807    2.073799
pyperstudlep |   1.027443    .015542     1.79   0.074     .9974278     1.05836
pyperstude~s |   1.009684   .0075053     1.30   0.195     .9950807    1.024502
pyperstudw~e |   1.029177   .0443259     0.67   0.504     .9458658    1.119827
pyperstudb~k |   1.002614   .0485633     0.05   0.957       .91181    1.102461
pyperstudl~o |   1.015563    .042965     0.37   0.715     .9347495    1.103362
pyperstudm~e |   .9933764   .0119202    -0.55   0.580     .9702859    1.017016
       Asian |  (omitted)
       Black |   1.334103   1.303816     0.29   0.768     .1964771    9.058717
      Latino |   1.397314   .9005253     0.52   0.604     .3951129    4.941592
       Other |   .8155557    1.02043    -0.16   0.871     .0702139    9.472928
   AsianMale |  (omitted)
   BlackMale |   .6134384   1.085177    -0.28   0.782     .0191421    19.65862
  LatinoMale |    1.01834   1.031909     0.02   0.986     .1397491    7.420557
   OtherMale |   .6685122   767.0158    -0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 17

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
Iteration 0:   log likelihood = -316.58585
Iteration 1:   log likelihood = -275.99917
Iteration 2:   log likelihood = -273.68903
Iteration 3:   log likelihood = -273.59325
Iteration 4:   log likelihood = -273.57625
Iteration 5:   log likelihood = -273.57398
Iteration 6:   log likelihood = -273.57368
Iteration 7:   log likelihood = -273.57363
Iteration 8:   log likelihood = -273.57361

Multinomial logistic regression                 Number of obs   =        311
                                                LR chi2(32)     =      86.02
                                                Prob > chi2     =     0.0000
Log likelihood = -273.57361                     Pseudo R2       =     0.1359
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9788785   .0292408    -0.71   0.475     .9232129      1.0379
       exper |   1.060777   .0431739     1.45   0.147      .979445    1.148863
        male |   .9210065   .3730605    -0.20   0.839     .4163678    2.037268
         age |   .9203789   .0347493    -2.20   0.028     .8547304    .9910697
pyacctrati~2 |   .9627456   .2903794    -0.13   0.900     .5330594    1.738791
pyperstudlep |   .9414593   .0427958    -1.33   0.184     .8612091    1.029187
pyperstude~s |   .9928478   .0177577    -0.40   0.688     .9586463    1.028269
pyperstudw~e |   1.032933   .1242707     0.27   0.788     .8159533    1.307612
pyperstudb~k |   1.234801   .1882209     1.38   0.166     .9159001    1.664737
pyperstudl~o |   1.020968   .1193356     0.18   0.859     .8119319    1.283821
pyperstudm~e |   .9523447   .0316999    -1.47   0.142     .8921973    1.016547
       Asian |  (omitted)
       Black |   3.51e+07   1.14e+11     0.01   0.996            0           .
      Latino |    4.02853   3.598798     1.56   0.119     .6994308    23.20323
       Other |   .0000226    .033569    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   .3163206   .4052207    -0.90   0.369     .0256862    3.895421
   OtherMale |    .029042   61.00393    -0.00   0.999            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.011061   .0207986     0.53   0.593     .9711077    1.052659
       exper |    1.01528   .0251991     0.61   0.541     .9670731    1.065891
        male |   2.986319   .9060417     3.61   0.000     1.647721    5.412384
         age |   .9892668   .0223641    -0.48   0.633     .9463909    1.034085
pyacctrati~2 |    1.37428   .3165315     1.38   0.167     .8750285    2.158383
pyperstudlep |   .9776457   .0247488    -0.89   0.372     .9303226    1.027376
pyperstude~s |   1.042218   .0129651     3.32   0.001     1.017114    1.067941
pyperstudw~e |   1.101733   .1326434     0.80   0.421     .8701535    1.394945
pyperstudb~k |   1.089762   .1548163     0.61   0.545      .824909     1.43965
pyperstudl~o |   1.101571   .1312526     0.81   0.417     .8721507    1.391341
pyperstudm~e |   .9981324   .0140476    -0.13   0.894     .9709759    1.026049
       Asian |  (omitted)
       Black |   1.349456   6181.668     0.00   1.000            0           .
      Latino |   .2579871   .3038912    -1.15   0.250     .0256414    2.595704
       Other |   1.34e-06   .0012567    -0.01   0.988            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |    4.57711   6.331161     1.10   0.271     .3042218    68.86402
   OtherMale |   1.225541    1624.82     0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 18

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -433.29228
Iteration 1:   log likelihood = -390.38619
Iteration 2:   log likelihood = -388.40657
Iteration 3:   log likelihood = -388.33147
Iteration 4:   log likelihood = -388.31625
Iteration 5:   log likelihood = -388.31303
Iteration 6:   log likelihood = -388.31232
Iteration 7:   log likelihood = -388.31214
Iteration 8:   log likelihood = -388.31211
Iteration 9:   log likelihood =  -388.3121

Multinomial logistic regression                 Number of obs   =        407
                                                LR chi2(34)     =      89.96
                                                Prob > chi2     =     0.0000
```

```
Log likelihood =  -388.3121                     Pseudo R2       =     0.1038

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.011878   .0218223     0.55   0.584     .9699985    1.055566
       exper |   .9934203   .0261813    -0.25   0.802     .9434087    1.046083
        male |   1.057789   .3704449     0.16   0.873     .5324787    2.101336
         age |   .9671675   .0204463    -1.58   0.114     .9279124    1.008083
pyacctrati~2 |   .6165529   .1690084    -1.76   0.078     .3602803    1.055116
pyperstudlep |   1.008917   .0164648     0.54   0.586     .9771572    1.041709
pyperstude~s |   .9990209   .0134206    -0.07   0.942     .9730603    1.025674
pyperstudw~e |   .7027714   .1294871    -1.91   0.056     .4897544    1.008439
pyperstudb~k |   .7444857   .1432346    -1.53   0.125     .5106111    1.085482
pyperstudl~o |   .7043056     .12904    -1.91   0.056     .4918215     1.00859
pyperstudm~e |   1.006977   .0126798     0.55   0.581     .9824293    1.032138
       Asian |  (omitted)
       Black |    7.90329   9.267513     1.76   0.078     .7937371    78.69356
      Latino |   2.534413   1.084328     2.17   0.030     1.095716     5.86215
       Other |   .5455238   1650.421    -0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   .8111528   1.362771    -0.12   0.901     .0301334    21.83522
  LatinoMale |   .9303287   .5451168    -0.12   0.902     .2950417    2.933523
   OtherMale |    3172368   9.94e+09     0.00   0.996            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.013158   .0175596     0.75   0.451     .9793201    1.048166
       exper |   1.053478   .0261924     2.10   0.036     1.003372    1.106085
        male |   1.394962   .4107798     1.13   0.258     .7832594    2.484385
         age |   .9602142    .020427    -1.91   0.056     .9210012    1.001097
pyacctrati~2 |   1.425607   .3278295     1.54   0.123     .9083625    2.237383
pyperstudlep |   .9863537   .0149508    -0.91   0.365     .9574817    1.016096
pyperstude~s |   1.044195   .0135009     3.34   0.001     1.018066    1.070994
pyperstudw~e |   .8682601   .1523887    -0.80   0.421     .6155384    1.224742
pyperstudb~k |   .9000217   .1657834    -0.57   0.567     .6272812    1.291349
pyperstudl~o |   .8561932   .1504489    -0.88   0.377     .6067364    1.208213
pyperstudm~e |   .9885997   .0143263    -0.79   0.429     .9609157    1.017081
       Asian |  (omitted)
       Black |   5.620137   6.884263     1.41   0.159     .5094322    62.00225
      Latino |   .8693558   .3625682    -0.34   0.737     .3838846    1.968768
       Other |    1213388   2.16e+09     0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   .2607717   .4955494    -0.71   0.479     .0062908    10.80973
  LatinoMale |   .6891442   .4131079    -0.62   0.535     .2128417    2.231328
   OtherMale |   1.661754   3258.332     0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 19

Iteration 0:   log likelihood = -875.07174
Iteration 1:   log likelihood = -804.47026
Iteration 2:   log likelihood = -800.46546
Iteration 3:   log likelihood = -800.02137
Iteration 4:   log likelihood = -799.95459
Iteration 5:   log likelihood = -799.93848
Iteration 6:   log likelihood = -799.93506
Iteration 7:   log likelihood = -799.93435
Iteration 8:   log likelihood = -799.93418
Iteration 9:   log likelihood = -799.93415
Iteration 10:  log likelihood = -799.93414

Multinomial logistic regression                 Number of obs   =        815
                                                LR chi2(38)     =     150.28
```

```
                                                Prob > chi2     =     0.0000
Log likelihood = -799.93414                     Pseudo R2       =     0.0859

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.015348   .0143939     1.07   0.283     .9875244    1.043955
       exper |   1.023392   .0172807     1.37   0.171     .9900767    1.057828
        male |   .9345223   .2816677    -0.22   0.822     .5176486    1.687113
         age |   .9865632   .0127207    -1.05   0.294     .9619435    1.011813
pyacctrati~2 |   1.008378   .1614764     0.05   0.958     .7367439    1.380163
pyperstudlep |   1.007356    .006267     1.18   0.239     .9951474    1.019714
pyperstude~s |   .9827135   .0091038    -1.88   0.060     .9650315     1.00072
pyperstudw~e |   .9281865   .0940467    -0.74   0.462     .7610074    1.132092
pyperstudb~k |    1.03772   .1044303     0.37   0.713     .8519619    1.263981
pyperstudl~o |   .9787923   .0918388    -0.23   0.819     .8143731    1.176407
pyperstudm~e |   .9977976   .0134355    -0.16   0.870      .971809    1.024481
       Asian |   6.69e-08   .0002474    -0.00   0.996            0           .
       Black |   .4459049   .2489425    -1.45   0.148     .1492892    1.331853
      Latino |   1.192716    .276115     0.76   0.446     .7576756    1.877548
       Other |   .9859851   .9361161    -0.01   0.988     .1533631    6.338988
   AsianMale |    8693180   8.26e+10     0.00   0.999            0           .
   BlackMale |   6.017317    5.73131     1.88   0.060     .9303783    38.91762
  LatinoMale |   1.156453   .4263217     0.39   0.693     .5614821    2.381881
   OtherMale |   3.65e-07   .0006261    -0.01   0.993            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.021414   .0152527     1.42   0.156     .9919527    1.051751
       exper |   1.095227   .0219941     4.53   0.000     1.052957    1.139194
        male |   1.456241   .4961388     1.10   0.270     .7468448    2.839463
         age |   .9880129   .0163251    -0.73   0.465     .9565289    1.020533
pyacctrati~2 |   1.190261   .2207646     0.94   0.348     .8274938    1.712062
pyperstudlep |   1.022046   .0073082     3.05   0.002     1.007822    1.036471
pyperstude~s |   1.016694   .0123499     1.36   0.173     .9927745     1.04119
pyperstudw~e |   .8851958   .0962462    -1.12   0.262     .7153018    1.095442
pyperstudb~k |   .9285612    .102655    -0.67   0.503     .7476663    1.153223
pyperstudl~o |    .889556   .0898484    -1.16   0.247     .7297916    1.084296
pyperstudm~e |   .9737601   .0199105    -1.30   0.193     .9355078    1.013577
       Asian |   3.17e-07   .0014253    -0.00   0.997            0           .
       Black |   .6905427   .4423999    -0.58   0.563     .1967269    2.423915
      Latino |   1.041449   .2940732     0.14   0.886     .5988046    1.811303
       Other |   3.09e-07   .0004188    -0.01   0.991            0           .
   AsianMale |   1.82e+13   1.35e+17     0.00   0.997            0           .
   BlackMale |   7.19e-07   .0008535    -0.01   0.990            0           .
  LatinoMale |   1.174408   .4991673     0.38   0.705     .5105363    2.701541
   OtherMale |   1.14e+07   1.54e+10     0.01   0.990            0           .
------------------------------------------------------------------------------


---------> region = 20

Iteration 0:   log likelihood = -2100.9698
Iteration 1:   log likelihood = -1997.1491
Iteration 2:   log likelihood = -1993.0417
Iteration 3:   log likelihood = -1992.6693
Iteration 4:   log likelihood = -1992.6095
Iteration 5:   log likelihood = -1992.5955
Iteration 6:   log likelihood = -1992.5923
Iteration 7:   log likelihood = -1992.5916
Iteration 8:   log likelihood = -1992.5915
Iteration 9:   log likelihood = -1992.5915

Multinomial logistic regression                 Number of obs   =       2032
                                                LR chi2(38)     =     216.76
```

```
                                                Prob > chi2     =     0.0000
Log likelihood = -1992.5915                     Pseudo R2       =     0.0516

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9988131    .008232    -0.14   0.885     .9828082    1.015079
       exper |   1.000565   .0102856     0.05   0.956     .9806075    1.020929
        male |   1.238481   .1917286     1.38   0.167     .9143563    1.677504
         age |   .9808584   .0084939    -2.23   0.026     .9643512    .9976483
pyacctrati~2 |    1.06565    .100697     0.67   0.501     .8854854    1.282471
pyperstudlep |   .9836721   .0066094    -2.45   0.014     .9708028     .996712
pyperstude~s |    1.00391   .0056602     0.69   0.489     .9928772    1.015065
pyperstudw~e |   1.000016   .0349781     0.00   1.000     .9337577    1.070977
pyperstudb~k |   .9826733   .0371762    -0.46   0.644     .9124452    1.058307
pyperstudl~o |   .9940472   .0358907    -0.17   0.869      .926134     1.06694
pyperstudm~e |    1.00513   .0064055     0.80   0.422     .9926531    1.017763
       Asian |   .6744496   .7846726    -0.34   0.735     .0689666    6.595688
       Black |   1.704299   .5003289     1.82   0.069     .9586486    3.029925
      Latino |   1.212287   .1830156     1.28   0.202     .9017823    1.629704
       Other |   .3375857   .3672657    -1.00   0.318     .0400264    2.847226
   AsianMale |   5.12e-07   .0007836    -0.01   0.992            0           .
   BlackMale |    1.63494   .7248291     1.11   0.267     .6856978     3.89826
  LatinoMale |   1.189458   .2756556     0.75   0.454     .7552382    1.873329
   OtherMale |   4.908075   7.284675     1.07   0.284     .2676325     90.0085
-------------+----------------------------------------------------------------
3            |
      tenure |   1.024231   .0084384     2.91   0.004     1.007825    1.040904
       exper |   1.074677   .0140183     5.52   0.000      1.04755    1.102506
        male |   1.592707   .2712603     2.73   0.006     1.140681     2.22386
         age |    .954898   .0112262    -3.93   0.000     .9331466    .9771565
pyacctrati~2 |   1.370749   .1440548     3.00   0.003     1.115587    1.684273
pyperstudlep |   1.008042   .0065327     1.24   0.216     .9953189    1.020927
pyperstude~s |   1.028462    .006597     4.38   0.000     1.015613    1.041473
pyperstudw~e |   1.033827   .0400311     0.86   0.390     .9582712    1.115341
pyperstudb~k |   1.015695   .0423157     0.37   0.709     .9360534    1.102112
pyperstudl~o |    1.00334   .0400892     0.08   0.933     .9277642    1.085072
pyperstudm~e |   .9858113   .0097609    -1.44   0.149     .9668647    1.005129
       Asian |   4.20e-07   .0005776    -0.01   0.991            0           .
       Black |   1.862858   .5668195     2.04   0.041     1.026079    3.382037
      Latino |   1.104792   .1843224     0.60   0.550     .7966487    1.532125
       Other |   3.87e-07   .0004376    -0.01   0.990            0           .
   AsianMale |    3178031   4.37e+09     0.01   0.991            0           .
   BlackMale |   .6770305   .3702645    -0.71   0.476     .2317878    1.977543
  LatinoMale |   .8371366   .2206588    -0.67   0.500     .4993789    1.403339
   OtherMale |   1.761016   3221.052     0.00   1.000            0           .
------------------------------------------------------------------------------

by pyschooltype:


. bysort pyschooltype : mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian
Black Latino
>  Other AsianMale BlackMale LatinoMale OtherMale if validcert2007a==1, rrr iter(20)


---------->  pyschooltype =
no observations


---------->  pyschooltype = B

note: Asian omitted because of collinearity
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -335.10713
Iteration 1:   log likelihood = -311.05446
Iteration 2:   log likelihood = -303.19194
Iteration 3:   log likelihood =  -302.8472
Iteration 4:   log likelihood = -302.82519
Iteration 5:   log likelihood = -302.82161
Iteration 6:   log likelihood = -302.82076
Iteration 7:   log likelihood = -302.82057
Iteration 8:   log likelihood = -302.82053
Iteration 9:   log likelihood = -302.82052

Multinomial logistic regression                 Number of obs   =        375
                                                LR chi2(34)     =      64.57
                                                Prob > chi2     =     0.0012
Log likelihood = -302.82052                     Pseudo R2       =     0.0963

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.025216   .0327692     0.78   0.436     .9629599    1.091497
       exper |   1.020172   .0417481     0.49   0.626     .9415424    1.105368
        male |   1.816421    .924234     1.17   0.241     .6700495    4.924092
         age |   .9520422    .033192    -1.41   0.159       .88916    1.019371
pyacctrati~2 |   .3822308   .1470166    -2.50   0.012      .179858    .8123094
pyperstudlep |   1.003793    .031354     0.12   0.904     .9441839    1.067166
pyperstude~s |   .9595152   .0176632    -2.25   0.025      .925513    .9947666
pyperstudw~e |   .9396728    .032343    -1.81   0.071     .8783726    1.005251
pyperstudb~k |   .9859194   .0381074    -0.37   0.714     .9139892    1.063511
pyperstudl~o |   .9746911   .0357023    -0.70   0.484     .9071687    1.047239
pyperstudm~e |   .9779775    .030562    -0.71   0.476     .9198747     1.03975
       Asian |  (omitted)
       Black |   4.263881   4.544183     1.36   0.174     .5280153    34.43211
      Latino |   5.507124   5.114491     1.84   0.066     .8920931    33.99692
       Other |   1.36e-06   .0044298    -0.00   0.997            0           .
   AsianMale |  (omitted)
   BlackMale |   .2351573   .3207763    -1.06   0.289     .0162271    3.407815
  LatinoMale |   .7635596   1.024608    -0.20   0.841     .0550337    10.59392
   OtherMale |   .6337564   2927.853    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9659513   .0163066    -2.05   0.040     .9345138    .9984463
       exper |   1.017182   .0192445     0.90   0.368     .9801543    1.055609
        male |   .8408847   .2127931    -0.68   0.493     .5120739     1.38083
         age |   1.016265    .017854     0.92   0.358     .9818673    1.051868
pyacctrati~2 |   .7688479   .1489357    -1.36   0.175     .5259588    1.123904
pyperstudlep |   .9690469    .018641    -1.63   0.102     .9331915     1.00628
pyperstude~s |   .9965173   .0088685    -0.39   0.695     .9792862    1.014052
pyperstudw~e |   .9708822   .0243543    -1.18   0.239     .9243031    1.019808
pyperstudb~k |   .9684587   .0264746    -1.17   0.241     .9179349    1.021763
pyperstudl~o |   .9760611   .0251794    -0.94   0.348     .9279373    1.026681
pyperstudm~e |   .9946528   .0161975    -0.33   0.742     .9634075    1.026911
       Asian |  (omitted)
       Black |   2.209132    2.07615     0.84   0.399     .3501543    13.93747
      Latino |   1.089026   .8357317     0.11   0.912     .2420005    4.900727
       Other |   5.51e-07   .0009326    -0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |    1.03381   1.129095     0.03   0.976     .1215582    8.792187
  LatinoMale |   5.519606   6.341227     1.49   0.137     .5807657    52.45842
   OtherMale |   .9906558   2370.578    -0.00   1.000            0           .
------------------------------------------------------------------------------


--------->  pyschooltype = E
```

```
Iteration 0:   log likelihood = -11371.741
Iteration 1:   log likelihood =   -10756.6
Iteration 2:   log likelihood = -10751.222
Iteration 3:   log likelihood = -10751.216
Iteration 4:   log likelihood = -10751.216

Multinomial logistic regression                 Number of obs   =      10448
                                                LR chi2(38)     =    1241.05
                                                Prob > chi2     =     0.0000
Log likelihood = -10751.216                     Pseudo R2       =     0.0546

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.020283   .0042902     4.78   0.000     1.011909    1.028727
       exper |   1.006411   .0052792     1.22   0.223     .9961169    1.016812
        male |   1.671669   .1440633     5.96   0.000     1.411869    1.979276
         age |   .9744186   .0040043    -6.31   0.000     .9666018    .9822986
pyacctrati~2 |   .9027747   .0378591    -2.44   0.015     .8315398    .9801121
pyperstudlep |   1.007944   .0018502     4.31   0.000     1.004324    1.011577
pyperstude~s |   .9885757   .0021323    -5.33   0.000     .9844052    .9927637
pyperstudw~e |   .9972726   .0053109    -0.51   0.608     .9869176    1.007736
pyperstudb~k |   .9977568   .0060247    -0.37   0.710     .9860183    1.009635
pyperstudl~o |   1.000259   .0056065     0.05   0.963     .9893305    1.011308
pyperstudm~e |   1.010942   .0039411     2.79   0.005     1.003248    1.018696
       Asian |   .7038376    .289238    -0.85   0.393     .3145401    1.574957
       Black |   1.009211   .0960074     0.10   0.923      .837541    1.216067
      Latino |   1.172664   .0906094     2.06   0.039     1.007866    1.364408
       Other |   1.101515   .2973064     0.36   0.720     .6490006    1.869543
   AsianMale |   1.650969   1.308569     0.63   0.527      .349197    7.805614
   BlackMale |   .9660861   .1958915    -0.17   0.865      .649261    1.437515
  LatinoMale |   .6415602   .0938302    -3.03   0.002     .4816666    .8545318
   OtherMale |   1.479073   .9457259     0.61   0.540     .4224037    5.179068
-------------+----------------------------------------------------------------
3            |
      tenure |   1.021637   .0036651     5.97   0.000     1.014479    1.028846
       exper |   1.062944   .0052105    12.45   0.000     1.052781    1.073206
        male |   2.610026   .2030789    12.33   0.000     2.240862    3.040006
         age |   .9857676   .0040552    -3.48   0.000     .9778515    .9937479
pyacctrati~2 |   .9612653   .0391413    -0.97   0.332     .8875312    1.041125
pyperstudlep |   .9969375    .001804    -1.70   0.090     .9934081     1.00048
pyperstude~s |    1.00546   .0020625     2.65   0.008     1.001425     1.00951
pyperstudw~e |   1.006002   .0054997     1.09   0.274     .9952802    1.016839
pyperstudb~k |   .9946084   .0061254    -0.88   0.380     .9826749    1.006687
pyperstudl~o |   .9973552   .0057306    -0.46   0.645     .9861865     1.00865
pyperstudm~e |   .9987185   .0039671    -0.32   0.747     .9909733    1.006524
       Asian |   1.181207   .4567534     0.43   0.667     .5535798    2.520413
       Black |    .923678   .0890007    -0.82   0.410     .7647216    1.115676
      Latino |    1.16524   .0902829     1.97   0.048     1.001069    1.356333
       Other |   .9190538   .2667562    -0.29   0.771     .5203301    1.623315
   AsianMale |   1.092666   .8169692     0.12   0.906     .2523816    4.730613
   BlackMale |    .588156   .1202923    -2.60   0.009     .3939136    .8781812
  LatinoMale |    .569616   .0796001    -4.03   0.000      .433144    .7490866
   OtherMale |   .1874132   .1736784    -1.81   0.071     .0304775    1.152446
------------------------------------------------------------------------------


---------->  pyschooltype = M

Iteration 0:   log likelihood = -6203.2011
Iteration 1:   log likelihood = -5921.1494
Iteration 2:   log likelihood = -5916.2875
Iteration 3:   log likelihood =  -5916.275
```

```
Iteration 4:   log likelihood =  -5916.275

Multinomial logistic regression                 Number of obs   =       5858
                                                LR chi2(38)     =     573.85
                                                Prob > chi2     =     0.0000
Log likelihood =  -5916.275                     Pseudo R2       =     0.0463

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.01126   .0050139     2.26   0.024     1.001481    1.021135
       exper |   1.004477   .0061677     0.73   0.467      .992461    1.016638
        male |   1.605584   .1271111     5.98   0.000     1.374817    1.875085
         age |   .9757079   .0048335    -4.96   0.000     .9662802    .9852275
pyacctrati~2 |   .8885108   .0502436    -2.09   0.037     .7952961    .9926508
pyperstudlep |   1.008298   .0036491     2.28   0.022     1.001171    1.015476
pyperstude~s |   .9956417   .0028473    -1.53   0.127     .9900767    1.001238
pyperstudw~e |   .9943037   .0074603    -0.76   0.446     .9797888    1.009034
pyperstudb~k |   .9909908   .0084195    -1.07   0.287     .9746255    1.007631
pyperstudl~o |    .991883   .0080169    -1.01   0.313      .976294    1.007721
pyperstudm~e |   1.016332   .0050713     3.25   0.001      1.00644     1.02632
       Asian |   1.562366   .6367442     1.09   0.274     .7028696     3.47289
       Black |   .9701946   .1093059    -0.27   0.788     .7779634    1.209925
      Latino |   1.874829   .2181182     5.40   0.000     1.492563    2.354999
       Other |   1.092287   .4060456     0.24   0.812     .5271232    2.263401
   AsianMale |   .6755661   .4383992    -0.60   0.546     .1893619    2.410145
   BlackMale |   1.519711   .2710525     2.35   0.019     1.071377    2.155656
  LatinoMale |   .8259046   .1310454    -1.21   0.228     .6051606    1.127169
   OtherMale |   1.647611   .8924733     0.92   0.357     .5698732    4.763554
-------------+----------------------------------------------------------------
3            |
      tenure |   1.015052   .0052116     2.91   0.004     1.004889    1.025318
       exper |   1.065929   .0078236     8.70   0.000     1.050705    1.081374
        male |   2.028776   .1792973     8.00   0.000     1.706112    2.412464
         age |   .9642353    .006181    -5.68   0.000     .9521966    .9764263
pyacctrati~2 |   .9063547   .0605362    -1.47   0.141      .795144     1.03312
pyperstudlep |   .9948109   .0046673    -1.11   0.267     .9857051    1.004001
pyperstude~s |   1.006991    .003329     2.11   0.035     1.000488    1.013537
pyperstudw~e |   1.023489    .010511     2.26   0.024     1.003094    1.044299
pyperstudb~k |   1.003257   .0115629     0.28   0.778     .9808482    1.026178
pyperstudl~o |   1.009274   .0110409     0.84   0.399     .9878642    1.031147
pyperstudm~e |   1.013876   .0059831     2.34   0.020     1.002216     1.02567
       Asian |   .8022219   .5228945    -0.34   0.735     .2236014    2.878156
       Black |   .8259408   .1239934    -1.27   0.203     .6154081    1.108497
      Latino |   1.519405    .221136     2.87   0.004     1.142322    2.020963
       Other |   .7313265   .4087408    -0.56   0.576     .2445525    2.187009
   AsianMale |   .6760348   .6978436    -0.38   0.704     .0893939    5.112465
   BlackMale |   1.822302   .3934864     2.78   0.005     1.193498    2.782394
  LatinoMale |   .8989786   .1699392    -0.56   0.573     .6206427    1.302138
   OtherMale |   1.430376   1.069508     0.48   0.632     .3303678    6.193027
------------------------------------------------------------------------------


---------->  pyschooltype = S

Iteration 0:   log likelihood = -6925.5249
Iteration 1:   log likelihood = -6628.0653
Iteration 2:   log likelihood = -6616.8508
Iteration 3:   log likelihood = -6616.6579
Iteration 4:   log likelihood = -6616.6171
Iteration 5:   log likelihood = -6616.6075
Iteration 6:   log likelihood = -6616.6053
Iteration 7:   log likelihood = -6616.6049
Iteration 8:   log likelihood = -6616.6048
```

```
Iteration 9:   log likelihood = -6616.6048

Multinomial logistic regression                 Number of obs   =       7193
                                                LR chi2(38)     =     617.84
                                                Prob > chi2     =     0.0000
Log likelihood = -6616.6048                     Pseudo R2       =     0.0446

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.006243    .003904     1.60   0.109     .9986202    1.013924
       exper |   1.004782   .0049147     0.98   0.329     .9951951    1.014461
        male |   1.062484   .0706455     0.91   0.362     .9326637    1.210374
         age |   .9747149   .0041512    -6.01   0.000     .9666126    .9828851
pyacctrati~2 |   .9263203   .0615988    -1.15   0.250     .8131256    1.055273
pyperstudlep |   1.019006   .0044942     4.27   0.000     1.010235    1.027852
pyperstude~s |   .9888786   .0022991    -4.81   0.000     .9843827    .9933951
pyperstudw~e |   .9971483   .0060167    -0.47   0.636     .9854253    1.009011
pyperstudb~k |   1.002596   .0067982     0.38   0.702     .9893602    1.016009
pyperstudl~o |    1.00214   .0064789     0.33   0.741     .9895218    1.014919
pyperstudm~e |   .9995191   .0033128    -0.15   0.885     .9930472    1.006033
       Asian |   .5587688   .2913891    -1.12   0.264     .2010685    1.552817
       Black |   1.198545   .1366037     1.59   0.112     .9586033    1.498545
      Latino |   1.775144   .2009453     5.07   0.000      1.42193    2.216099
       Other |   .4411336   .1876102    -1.92   0.054     .1916733    1.015263
   AsianMale |   2.482318   1.996441     1.13   0.258     .5131754     12.0074
   BlackMale |   2.002288   .3170419     4.38   0.000     1.468072    2.730899
  LatinoMale |   1.254644   .1779611     1.60   0.110     .9501333    1.656749
   OtherMale |   2.251551   1.281409     1.43   0.154     .7379784    6.869416
-------------+----------------------------------------------------------------
3            |
      tenure |   1.001502   .0047518     0.32   0.752     .9922317    1.010859
       exper |   1.060575   .0077266     8.07   0.000     1.045539    1.075828
        male |   1.810628   .1688706     6.37   0.000     1.508137     2.17379
         age |   .9661638   .0066359    -5.01   0.000     .9532448    .9792578
pyacctrati~2 |   1.095837   .0992135     1.01   0.312     .9176584    1.308612
pyperstudlep |   1.005887   .0068952     0.86   0.392     .9924631    1.019493
pyperstude~s |    1.00942   .0031053     3.05   0.002     1.003352    1.015524
pyperstudw~e |   1.050725   .0122911     4.23   0.000     1.026909    1.075093
pyperstudb~k |   1.038693   .0132928     2.97   0.003     1.012964    1.065076
pyperstudl~o |   1.036129   .0126817     2.90   0.004     1.011569    1.061285
pyperstudm~e |   .9974675   .0047316    -0.53   0.593     .9882368    1.006784
       Asian |   .5069805   .5276874    -0.65   0.514      .065921    3.899051
       Black |   .6398012   .1502346    -1.90   0.057      .403804    1.013723
      Latino |   1.365675   .2571514     1.66   0.098     .9442117    1.975265
       Other |   .4866836   .3596147    -0.97   0.330     .1143633    2.071127
   AsianMale |   2.26e-06   .0018265    -0.02   0.987            0           .
   BlackMale |    2.46584    .690347     3.22   0.001     1.424488    4.268457
  LatinoMale |   .9830655   .2171736    -0.08   0.938     .6375871    1.515742
   OtherMale |   3.167661   2.704616     1.35   0.177     .5942439    16.88545
------------------------------------------------------------------------------
```

2007-08

```
. mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian Black Latino Other
AsianMale Black
> Male LatinoMale OtherMale if validcert2008a==1, rrr iter(20)

Iteration 0:   log likelihood = -26142.462
Iteration 1:   log likelihood =  -24986.71
Iteration 2:   log likelihood = -24964.867
Iteration 3:   log likelihood = -24964.831
Iteration 4:   log likelihood = -24964.831
```

```
Multinomial logistic regression                 Number of obs   =      24470
                                                LR chi2(38)     =    2355.26
                                                Prob > chi2     =     0.0000
Log likelihood = -24964.831                     Pseudo R2       =     0.0450

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.01372   .0024406     5.66   0.000     1.008948    1.018515
       exper |   1.001704   .0030258     0.56   0.573      .995791    1.007652
        male |   1.174249   .0476927     3.95   0.000     1.084397    1.271546
         age |   .9760448   .0023976    -9.87   0.000     .9713568    .9807554
pyacctrati~2 |   .9735339   .0244177    -1.07   0.285     .9268333    1.022588
pyperstudlep |   1.005566    .001253     4.45   0.000     1.003113    1.008025
pyperstude~s |   .9946571   .0012519    -4.26   0.000     .9922064    .9971138
pyperstudw~e |   .9897615    .003286    -3.10   0.002     .9833419    .9962229
pyperstudb~k |   .9912055   .0037214    -2.35   0.019     .9839385    .9985262
pyperstudl~o |   .9921222   .0035093    -2.24   0.025     .9852679    .9990242
pyperstudm~e |     1.0044   .0021899     2.01   0.044     1.000117    1.008701
       Asian |   .6655645   .1664963    -1.63   0.104     .4076197    1.086739
       Black |   1.001992   .0593718     0.03   0.973     .8921288    1.125385
      Latino |   1.405101   .0752543     6.35   0.000     1.265083    1.560617
       Other |   1.178655   .2144603     0.90   0.366     .8251021    1.683704
   AsianMale |   1.928541   .8087168     1.57   0.117     .8477839    4.387052
   BlackMale |    1.68441    .159795     5.50   0.000      1.39861    2.028611
  LatinoMale |   1.115677   .0877643     1.39   0.164     .9562665    1.301661
   OtherMale |   .9096181   .2701957    -0.32   0.750     .5081778    1.628181
-------------+----------------------------------------------------------------
3            |
      tenure |   1.016311   .0023769     6.92   0.000     1.011663    1.020981
       exper |   1.058673   .0035822    16.85   0.000     1.051676    1.065717
        male |   1.410887   .0604754     8.03   0.000       1.2972    1.534538
         age |   .9743314   .0028852    -8.78   0.000      .968693    .9800027
pyacctrati~2 |   1.415425   .0373904    13.15   0.000     1.344006    1.490639
pyperstudlep |   1.010594   .0013588     7.84   0.000     1.007934    1.013261
pyperstude~s |   1.020146   .0014026    14.51   0.000     1.017401    1.022899
pyperstudw~e |   1.006092   .0039297     1.56   0.120     .9984195    1.013824
pyperstudb~k |   .9914547     .00438    -1.94   0.052     .9829071    1.000077
pyperstudl~o |   .9873556    .004102    -3.06   0.002     .9793485    .9954282
pyperstudm~e |   .9925855   .0026317    -2.81   0.005     .9874409    .9977569
       Asian |   .7497449   .2166956    -1.00   0.319     .4254949    1.321091
       Black |   .7869322   .0556728    -3.39   0.001     .6850428    .9039761
      Latino |   1.147185   .0699067     2.25   0.024     1.018036    1.292717
       Other |   .8001997   .1882633    -0.95   0.343     .5045868    1.268998
   AsianMale |    1.50488   .7492452     0.82   0.412     .5671635    3.992965
   BlackMale |   1.362528   .1573195     2.68   0.007     1.086586    1.708545
  LatinoMale |   .9836985   .0880877    -0.18   0.854     .8253517    1.172425
   OtherMale |   1.235674    .440193     0.59   0.552     .6147155    2.483896
------------------------------------------------------------------------------

. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=24470)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     58.467    2    0.000
       exper |    329.425    2    0.000
        male |     65.756    2    0.000
         age |    135.443    2    0.000
pyacctrati~2 |    215.004    2    0.000
```

```
pyperstudlep |     63.600    2    0.000
pyperstude~s |    317.631    2    0.000
pyperstudw~e |     18.210    2    0.000
pyperstudb~k |      6.896    2    0.032
pyperstudl~o |     10.750    2    0.005
pyperstudm~e |     18.125    2    0.000
       Asian |      3.032    2    0.220
       Black |     13.113    2    0.001
      Latino |     40.282    2    0.000
       Other |      2.573    2    0.276
   AsianMale |      2.557    2    0.278
   BlackMale |     30.866    2    0.000
  LatinoMale |      2.626    2    0.269
   OtherMale |      0.660    2    0.719
-------------------------------------

**** Wald tests for independent variables (N=24470)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+-------------------------
      tenure |     58.372    2    0.000
       exper |    309.775    2    0.000
        male |     65.747    2    0.000
         age |    134.027    2    0.000
pyacctrati~2 |    215.959    2    0.000
pyperstudlep |     63.240    2    0.000
pyperstude~s |    311.277    2    0.000
pyperstudw~e |     18.306    2    0.000
pyperstudb~k |      6.857    2    0.032
pyperstudl~o |     10.750    2    0.005
pyperstudm~e |     17.754    2    0.000
       Asian |      2.980    2    0.225
       Black |     12.852    2    0.002
      Latino |     40.354    2    0.000
       Other |      2.522    2    0.283
   AsianMale |      2.528    2    0.283
   BlackMale |     30.615    2    0.000
  LatinoMale |      2.628    2    0.269
   OtherMale |      0.661    2    0.719
-------------------------------------

**** Hausman tests of IIA assumption (N=24470)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+----------------------------------
       2 |   -80.674   19     ---    ---
       3 |    -5.655   19     ---    ---
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=24470)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+-----------------------------------------------------
       2 |  -5091.559  -5082.543  18.031   20    0.585   for Ho
       3 |  -6093.465  -6084.338  18.254   20    0.571   for Ho
-------------------------------------------------------------------

**** Wald tests for combining alternatives (N=24470)
```

```
 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1521.503   19    0.000
       2-       1  |  441.397   19    0.000
       3-       1  | 1410.823   19    0.000
-------------------------------------------

**** LR tests for combining alternatives (N=24470)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1685.846   19    0.000
       2-       1  |  453.005   19    0.000
       3-       1  | 1560.011   19    0.000
-------------------------------------------

by region:

. bysort region: mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian
Black Latino Other
> AsianMale BlackMale LatinoMale OtherMale if validcert2008a==1, rrr iter(20)


---------->  region = 1

note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -1883.4244
Iteration 1:   log likelihood = -1787.7794
Iteration 2:   log likelihood = -1784.4505
Iteration 3:   log likelihood = -1784.0971
Iteration 4:   log likelihood = -1784.0424
Iteration 5:   log likelihood = -1784.0291
Iteration 6:   log likelihood = -1784.0263
Iteration 7:   log likelihood = -1784.0256
Iteration 8:   log likelihood = -1784.0255
Iteration 9:   log likelihood = -1784.0255

Multinomial logistic regression                 Number of obs   =       1750
                                                LR chi2(36)     =     198.80
                                                Prob > chi2     =     0.0000
Log likelihood = -1784.0255                     Pseudo R2       =     0.0528

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |    .988966   .0086041    -1.28   0.202     .9722453    1.005974
       exper |    1.00899   .0126209     0.72   0.474     .9845539    1.034032
        male |   1.250119   .3941744     0.71   0.479     .6738439    2.319227
         age |   1.018672   .0107246     1.76   0.079     .9978673     1.03991
pyacctrati~2 |   1.170839   .1109727     1.66   0.096     .9723443    1.409855
pyperstudlep |   .9968319   .0029362    -1.08   0.281     .9910936    1.002603
pyperstude~s |   1.001784   .0061686     0.29   0.772      .989766    1.013947
pyperstudw~e |   .9756696   .0716602    -0.34   0.737     .8448594    1.126733
pyperstudb~k |   .8324132   .1152253    -1.33   0.185     .6346187    1.091855
pyperstudl~o |   .9391155   .0631526    -0.93   0.350     .8231488     1.07142
pyperstudm~e |   1.009676   .0105231     0.92   0.356     .9892606    1.030513
       Asian |   6.040769   6.758632     1.61   0.108     .6741196    54.13118
       Black |    3608806   4.49e+09     0.01   0.990            0           .
      Latino |   1.055734   .2309151     0.25   0.804     .6876631    1.620814
```

```
       Other |   1.033792   .8239063     0.04   0.967     .2167936    4.929689
   AsianMale |   .1867721   1353.199    -0.00   1.000            0           .
   BlackMale |   1.11e-07   .0001375    -0.01   0.990            0           .
  LatinoMale |   .6230775   .2119396    -1.39   0.164     .3198941    1.213607
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
2            |  (base outcome)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.011665   .0098984     1.19   0.236     .9924496    1.031253
       exper |   1.098715   .0190776     5.42   0.000     1.061953     1.13675
        male |   .6888411   .2645343    -0.97   0.332     .3245142    1.462192
         age |   .9549391   .0146811    -3.00   0.003     .9265938    .9841515
pyacctrati~2 |   1.454874   .1532798     3.56   0.000     1.183439    1.788564
pyperstudlep |   1.014886   .0034382     4.36   0.000      1.00817    1.021648
pyperstude~s |   .9937953   .0072853    -0.85   0.396     .9796186    1.008177
pyperstudw~e |   1.077182   .0999684     0.80   0.423     .8980343    1.292068
pyperstudb~k |   1.017036   .1694365     0.10   0.919     .7337151    1.409759
pyperstudl~o |   1.048182   .0866595     0.57   0.569     .8913802    1.232568
pyperstudm~e |   .9927528   .0135535    -0.53   0.594     .9665407    1.019676
       Asian |   5.93e-07   .0007615    -0.01   0.991            0           .
       Black |    2786604   3.46e+09     0.01   0.990            0           .
      Latino |   .6315921   .1489026    -1.95   0.051     .3978868    1.002568
       Other |   .3431772   .4121294    -0.89   0.373     .0326055    3.611986
   AsianMale |   1.15e+14   6.07e+17     0.01   0.995            0           .
   BlackMale |   2.67e-13   4.50e-10    -0.02   0.986            0           .
  LatinoMale |   1.398083    .576846     0.81   0.417     .6227717    3.138606
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 2

Iteration 0:   log likelihood = -762.86823
Iteration 1:   log likelihood =  -715.3235
Iteration 2:   log likelihood = -713.39001
Iteration 3:   log likelihood = -713.19516
Iteration 4:   log likelihood = -713.16282
Iteration 5:   log likelihood =  -713.1555
Iteration 6:   log likelihood = -713.15369
Iteration 7:   log likelihood = -713.15334
Iteration 8:   log likelihood = -713.15328
Iteration 9:   log likelihood = -713.15327

Multinomial logistic regression                 Number of obs   =        740
                                                LR chi2(38)     =      99.43
                                                Prob > chi2     =     0.0000
Log likelihood = -713.15327                     Pseudo R2       =     0.0652

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.016641   .0156204     1.07   0.283     .9864816    1.047722
       exper |   .9813219   .0184198    -1.00   0.315     .9458757    1.018096
        male |   1.382925    .400512     1.12   0.263     .7839353    2.439591
         age |   .9816892   .0142684    -1.27   0.204     .9541182    1.010057
pyacctrati~2 |   .9986069   .1610307    -0.01   0.993     .7280041    1.369794
pyperstudlep |   .9596725   .0215186    -1.84   0.066     .9184102    1.002789
pyperstude~s |    1.01294   .0083034     1.57   0.117     .9967958    1.029346
pyperstudw~e |   .8925876   .0732927    -1.38   0.166     .7599001    1.048444
pyperstudb~k |   .8745449   .0785421    -1.49   0.136     .7333926    1.042864
pyperstudl~o |    .892405   .0708246    -1.43   0.151      .763849    1.042597
pyperstudm~e |   1.006932   .0092882     0.75   0.454      .988891    1.025302
       Asian |   2.792854   4.096058     0.70   0.484      .157637    49.48098
```

```
       Black |   1.365382   1.232524     0.35   0.730     .2327437    8.009957
      Latino |   1.687051   .4454128     1.98   0.048     1.005531    2.830488
       Other |   .9420387   1.117072    -0.05   0.960      .092196    9.625548
   AsianMale |   5.06e-07   .0007338    -0.01   0.992            0           .
   BlackMale |   1.126145   1.473113     0.09   0.928     .0867234    14.62355
  LatinoMale |   1.142035   .4534073     0.33   0.738     .5244912    2.486686
   OtherMale |   1.688298   2.555946     0.35   0.729     .0868558    32.81702
-------------+----------------------------------------------------------------
3            |
      tenure |   1.018413   .0139507     1.33   0.183      .991434    1.046126
       exper |   1.027702   .0191411     1.47   0.142     .9908624    1.065911
        male |   .6566327   .2023183    -1.37   0.172      .358967    1.201131
         age |   .9835093    .015318    -1.07   0.286     .9539403    1.013995
pyacctrati~2 |   1.309411   .2065783     1.71   0.088     .9611401    1.783878
pyperstudlep |   1.012418   .0189557     0.66   0.510     .9759392    1.050261
pyperstude~s |   1.024179   .0087543     2.80   0.005     1.007164    1.041482
pyperstudw~e |    1.05678   .0928405     0.63   0.530     .8896198    1.255349
pyperstudb~k |   .9621121   .0973146    -0.38   0.703     .7890951    1.173065
pyperstudl~o |   1.040144   .0886119     0.46   0.644     .8801931    1.229162
pyperstudm~e |   .9766293   .0145046    -1.59   0.111     .9486105    1.005476
       Asian |   2.16e-06   .0031149    -0.01   0.993            0           .
       Black |   1.929277   1.520208     0.83   0.404     .4117896    9.038864
      Latino |   .9306214   .2393781    -0.28   0.780      .562113    1.540716
       Other |   .6007121   .7236748    -0.42   0.672     .0566537    6.369489
   AsianMale |    2030494   2.93e+09     0.01   0.992            0           .
   BlackMale |   .9515466   1.362454    -0.03   0.972      .057498    15.74734
  LatinoMale |   2.992719   1.247974     2.63   0.009     1.321637    6.776724
   OtherMale |   2.55e-06   .0020801    -0.02   0.987            0           .
------------------------------------------------------------------------------


---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -320.67722
Iteration 1:   log likelihood =  -277.5113
Iteration 2:   log likelihood =  -276.4267
Iteration 3:   log likelihood =  -276.4191
Iteration 4:   log likelihood =  -276.4191

Multinomial logistic regression                 Number of obs   =        297
                                                LR chi2(32)     =      88.52
                                                Prob > chi2     =     0.0000
Log likelihood =  -276.4191                     Pseudo R2       =     0.1380

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.075361   .0293018     2.67   0.008     1.019438    1.134353
       exper |   .8860752   .0275754    -3.89   0.000     .8336437    .9418044
        male |   3.010652   1.262205     2.63   0.009     1.323724    6.847368
         age |   1.027904   .0250617     1.13   0.259     .9799393    1.078217
pyacctrati~2 |    1.38937   .4757312     0.96   0.337     .7101658    2.718166
pyperstudlep |   1.036428    .039976     0.93   0.354     .9609645    1.117817
pyperstude~s |   1.003788    .020218     0.19   0.851     .9649331    1.044207
pyperstudw~e |   .9522441   .0637107    -0.73   0.465     .8352144    1.085672
pyperstudb~k |   .9972644   .0687683    -0.04   0.968     .8711924    1.141581
pyperstudl~o |   .9573747   .0693626    -0.60   0.548     .8306378    1.103449
pyperstudm~e |   1.117678   .0389281     3.19   0.001     1.043927     1.19664
       Asian |  (omitted)
       Black |   .6085922   .5751557    -0.53   0.599     .0954752     3.87938
      Latino |   2.517958   1.756254     1.32   0.186     .6417156     9.87994
```

```
       Other |   1.619376   2.422735     0.32   0.747     .0862726    30.39645
   AsianMale |  (omitted)
   BlackMale |   4.334224   7.137491     0.89   0.373     .1718597    109.3072
  LatinoMale |   .2274137   .2274339    -1.48   0.139     .0320287    1.614706
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.047058   .0218946     2.20   0.028     1.005013    1.090862
       exper |   1.000646   .0290678     0.02   0.982     .9452655    1.059271
        male |   2.679554   1.023461     2.58   0.010     1.267489    5.664748
         age |   .9880942   .0255063    -0.46   0.643     .9393462    1.039372
pyacctrati~2 |    1.41252   .3952231     1.23   0.217       .81626    2.444336
pyperstudlep |   1.031292   .0342803     0.93   0.354     .9662454    1.100717
pyperstude~s |   1.064642   .0194301     3.43   0.001     1.027233    1.103413
pyperstudw~e |   1.009089   .0612542     0.15   0.882        .8959    1.136579
pyperstudb~k |   .9827148   .0621716    -0.28   0.783     .8681126    1.112446
pyperstudl~o |   .9588329   .0626239    -0.64   0.520     .8436236    1.089776
pyperstudm~e |    1.04939    .033396     1.51   0.130     .9859349     1.11693
       Asian |  (omitted)
       Black |   1.255596   .9141314     0.31   0.755     .3013952    5.230746
      Latino |   3.294863   2.220906     1.77   0.077     .8791926    12.34783
       Other |   2.826532   4.247725     0.69   0.489     .1486157    53.75803
   AsianMale |  (omitted)
   BlackMale |   3.645579   5.097189     0.93   0.355     .2353047    56.48101
  LatinoMale |   .2510182    .239372    -1.45   0.147     .0387254    1.627101
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 4

Iteration 0:   log likelihood = -5405.0461
Iteration 1:   log likelihood = -5101.7733
Iteration 2:   log likelihood = -5088.6374
Iteration 3:   log likelihood = -5088.5866
Iteration 4:   log likelihood = -5088.5866

Multinomial logistic regression                 Number of obs   =       5221
                                                LR chi2(38)     =     632.92
                                                Prob > chi2     =     0.0000
Log likelihood = -5088.5866                     Pseudo R2       =     0.0585

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.028599   .0054377     5.33   0.000     1.017997    1.039312
       exper |   1.012198   .0068507     1.79   0.073     .9988592    1.025714
        male |   1.079106   .0981834     0.84   0.403     .9028522    1.289767
         age |   .9688187   .0052067    -5.89   0.000     .9586673    .9790775
pyacctrati~2 |   .9688035   .0501979    -0.61   0.541     .8752482    1.072359
pyperstudlep |   .9972904     .00281    -0.96   0.336     .9917981    1.002813
pyperstude~s |   .9988931   .0034776    -0.32   0.750     .9921003    1.005732
pyperstudw~e |   .9955377    .005175    -0.86   0.390     .9854464    1.005732
pyperstudb~k |   .9912615   .0063351    -1.37   0.170     .9789223    1.003756
pyperstudl~o |   .9961523   .0061427    -0.63   0.532     .9841853    1.008265
pyperstudm~e |   1.004799   .0046646     1.03   0.302     .9956975    1.013983
       Asian |   .5467185   .2296361    -1.44   0.151     .2400141    1.245348
       Black |    .853513   .0863418    -1.57   0.117     .7000066    1.040682
      Latino |   1.573632   .1925228     3.71   0.000     1.238125    2.000054
       Other |   1.102587    .391798     0.27   0.783     .5494691    2.212496
   AsianMale |   1.435002   1.007626     0.51   0.607     .3623749      5.6826
   BlackMale |   2.141787   .3503913     4.66   0.000     1.554253    2.951419
  LatinoMale |   .9919955   .2016442    -0.04   0.968     .6660164    1.477524
   OtherMale |    .854744   .5797028    -0.23   0.817     .2262225    3.229507
```

```
-------------+----------------------------------------------------------------
3            |
      tenure |   1.040265   .0061084     6.72   0.000     1.028362    1.052307
       exper |   1.076742   .0095649     8.32   0.000     1.058157    1.095653
        male |   1.234433   .1373054     1.89   0.058     .9926333    1.535134
         age |   .9597101   .0073174    -5.39   0.000     .9454749    .9741596
pyacctrati~2 |   1.325202   .0819993     4.55   0.000      1.17385    1.496069
pyperstudlep |   1.014128    .003475     4.09   0.000      1.00734    1.020962
pyperstude~s |   1.029678   .0045274     6.65   0.000     1.020843     1.03859
pyperstudw~e |   1.006463   .0066805     0.97   0.332     .9934543    1.019642
pyperstudb~k |   .9881955   .0081987    -1.43   0.152     .9722563    1.004396
pyperstudl~o |   .9748665   .0076857    -3.23   0.001     .9599187    .9900471
pyperstudm~e |   .9903283   .0062343    -1.54   0.123     .9781844    1.002623
       Asian |   .8225969   .3843156    -0.42   0.676     .3292361     2.05526
       Black |   .5245498   .0707957    -4.78   0.000     .4026286    .6833904
      Latino |   1.227317   .1862689     1.35   0.177     .9115296    1.652506
       Other |     .59139    .335607    -0.93   0.355     .1944585    1.798544
   AsianMale |   .8854669   .8233619    -0.13   0.896     .1431108    5.478633
   BlackMale |   1.820177   .4006156     2.72   0.007     1.182406    2.801951
  LatinoMale |    1.01885   .2646545     0.07   0.943     .6123556    1.695183
   OtherMale |   2.179066   1.952193     0.87   0.385     .3764363     12.6139
-------------------------------------------------------------------------------


---------->  region = 5

Iteration 0:   log likelihood = -533.02433
Iteration 1:   log likelihood = -489.00507
Iteration 2:   log likelihood = -487.39945
Iteration 3:   log likelihood = -487.23444
Iteration 4:   log likelihood = -487.19665
Iteration 5:   log likelihood = -487.18916
Iteration 6:   log likelihood = -487.18782
Iteration 7:   log likelihood = -487.18752
Iteration 8:   log likelihood = -487.18745
Iteration 9:   log likelihood = -487.18743

Multinomial logistic regression                 Number of obs   =        512
                                                LR chi2(38)     =      91.67
                                                Prob > chi2     =     0.0000
Log likelihood = -487.18743                     Pseudo R2       =     0.0860

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.017714   .0189683     0.94   0.346      .981208    1.055579
       exper |   .9517726   .0230565    -2.04   0.041     .9076387    .9980525
        male |   1.934618   .5452606     2.34   0.019     1.113497    3.361254
         age |   1.007242   .0186719     0.39   0.697     .9713022    1.044511
pyacctrati~2 |   .8951155   .1778848    -0.56   0.577      .606347    1.321408
pyperstudlep |   .9864265   .0335009    -0.40   0.687     .9229036    1.054322
pyperstude~s |   .9979882   .0107833    -0.19   0.852     .9770756    1.019348
pyperstudw~e |    1.08711   .0581807     1.56   0.119     .9788544    1.207337
pyperstudb~k |   1.081266   .0586719     1.44   0.150     .9721753    1.202599
pyperstudl~o |   1.088685   .0712468     1.30   0.194     .9576283    1.237677
pyperstudm~e |   .9895009   .0241659    -0.43   0.666     .9432523    1.038017
       Asian |   6.101005   9.731735     1.13   0.257     .2676989    139.0452
       Black |    1.79887   .7443613     1.42   0.156     .7994252    4.047825
      Latino |   1.361304   1.642035     0.26   0.798     .1280021    14.47748
       Other |    10.5387    16.2344     1.53   0.126     .5146946    215.7868
   AsianMale |    .133497   .2877193    -0.93   0.350      .001954     9.12059
   BlackMale |   .9961422     .53672    -0.01   0.994     .3464935    2.863832
  LatinoMale |   .9870176   3746.589    -0.00   1.000            0           .
   OtherMale |   561112.6   1.24e+09     0.01   0.995            0           .
```

```
-------------+----------------------------------------------------------------
3            |
      tenure |   1.002744   .0156247     0.18   0.860     .9725834    1.033841
       exper |   1.078981   .0287982     2.85   0.004     1.023989    1.136927
        male |   3.137191   .8988577     3.99   0.000     1.789194    5.500782
         age |   .9583814   .0225457    -1.81   0.071      .915196    1.003605
pyacctrati~2 |   1.308799   .2488863     1.42   0.157     .9015816    1.899943
pyperstudlep |   1.010699    .033507     0.32   0.748     .9471143    1.078552
pyperstude~s |   1.022334   .0107834     2.09   0.036     1.001416    1.043689
pyperstudw~e |    1.02556   .0466711     0.55   0.579     .9380471    1.121237
pyperstudb~k |    1.00137   .0461304     0.03   0.976     .9149179    1.095992
pyperstudl~o |    1.00541   .0589078     0.09   0.927     .8963357    1.127758
pyperstudm~e |   1.003043   .0235187     0.13   0.897     .9579905    1.050215
       Asian |   4.92e-06   .0051921    -0.01   0.991            0           .
       Black |   2.554061   1.061027     2.26   0.024     1.131406     5.76559
      Latino |   2.161602    2.63063     0.63   0.526     .1990118    23.47861
       Other |   3.22e-06   .0033749    -0.01   0.990            0           .
   AsianMale |    .218419   329.1312    -0.00   0.999            0           .
   BlackMale |   .4794287   .2785786    -1.27   0.206     .1535048     1.49736
  LatinoMale |    2032773   4.46e+09     0.01   0.995            0           .
   OtherMale |     195613   7.76e+08     0.00   0.998            0           .
-------------------------------------------------------------------------------


---------->  region = 6

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -956.75684
Iteration 1:   log likelihood = -900.89447
Iteration 2:   log likelihood = -899.58392
Iteration 3:   log likelihood = -899.41205
Iteration 4:   log likelihood = -899.38288
Iteration 5:   log likelihood = -899.38003
Iteration 6:   log likelihood = -899.37943
Iteration 7:   log likelihood = -899.37931
Iteration 8:   log likelihood = -899.37928
Iteration 9:   log likelihood = -899.37927

Multinomial logistic regression                 Number of obs   =        893
                                                LR chi2(36)     =     114.76
                                                Prob > chi2     =     0.0000
Log likelihood = -899.37927                     Pseudo R2       =     0.0600

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.002326   .0131608     0.18   0.860     .9768607    1.028456
       exper |   1.019567   .0157995     1.25   0.211     .9890665    1.051009
        male |   1.240392   .2282431     1.17   0.242      .864829    1.779047
         age |    .965222    .012257    -2.79   0.005     .9414952    .9895467
pyacctrati~2 |   .8326145   .1013204    -1.51   0.132     .6559363    1.056881
pyperstudlep |   1.027363    .014373     1.93   0.054     .9995751    1.055923
pyperstude~s |   .9927404   .0065169    -1.11   0.267     .9800492    1.005596
pyperstudw~e |   1.026019   .0289448     0.91   0.363     .9708284    1.084348
pyperstudb~k |   1.011479   .0310796     0.37   0.710     .9523624    1.074266
pyperstudl~o |   1.018169   .0293253     0.63   0.532     .9622847    1.077299
pyperstudm~e |   1.003923   .0133513     0.29   0.768     .9780933    1.030436
       Asian |   1.526216   2.202375     0.29   0.770      .090221    25.81813
       Black |   2.641575   1.064187     2.41   0.016     1.199354    5.818065
      Latino |   .4310029   .2936884    -1.24   0.217     .1133615    1.638683
       Other |   3.18e-07     .00045    -0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |   .8029029   .5245529    -0.34   0.737     .2231288    2.889152
  LatinoMale |   2.831158    2.49219     1.18   0.237     .5042838    15.89473
```

```
   OtherMale |   4.66e+13   1.41e+17     0.01   0.992           0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.009952   .0132647     0.75   0.451     .9842852    1.036288
       exper |   1.066185   .0187736     3.64   0.000     1.030017    1.103623
        male |   2.711261   .5378625     5.03   0.000     1.837846    3.999756
         age |   .9695052   .0146991    -2.04   0.041     .9411193    .9987472
pyacctrati~2 |    1.41078   .1866758     2.60   0.009     1.088498    1.828484
pyperstudlep |   1.027827   .0160174     1.76   0.078     .9969086    1.059705
pyperstude~s |    1.01795   .0070578     2.57   0.010     1.004211    1.031878
pyperstudw~e |   1.001616   .0276592     0.06   0.953      .948846    1.057321
pyperstudb~k |   .9954095   .0296654    -0.15   0.877     .9389319    1.055284
pyperstudl~o |   .9746843   .0275023    -0.91   0.363     .9222441    1.030106
pyperstudm~e |   1.012981   .0131486     0.99   0.320     .9875357    1.039083
       Asian |   1.27e-06   .0018516    -0.01   0.993           0           .
       Black |   1.746479   .8375985     1.16   0.245     .6822342    4.470884
      Latino |   .8877678   .6144395    -0.17   0.863     .2286483    3.446916
       Other |   3.03e-07   .0004743    -0.01   0.992           0           .
   AsianMale |  (omitted)
   BlackMale |    .414463   .3268346    -1.12   0.264      .088359     1.94411
  LatinoMale |   .9150041   .8759849    -0.09   0.926     .1401264    5.974838
   OtherMale |   829166.5   3.89e+09     0.00   0.998           0           .
------------------------------------------------------------------------------


---------->  region = 7

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1123.7493
Iteration 1:   log likelihood =  -1056.406
Iteration 2:   log likelihood = -1054.4347
Iteration 3:   log likelihood = -1054.3646
Iteration 4:   log likelihood = -1054.3487
Iteration 5:   log likelihood = -1054.3451
Iteration 6:   log likelihood = -1054.3444
Iteration 7:   log likelihood = -1054.3443
Iteration 8:   log likelihood = -1054.3442

Multinomial logistic regression                 Number of obs   =       1078
                                                LR chi2(34)     =     138.81
                                                Prob > chi2     =     0.0000
Log likelihood = -1054.3442                     Pseudo R2       =     0.0618

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9948321   .0121681    -0.42   0.672     .9712667    1.018969
       exper |   .9907974   .0148403    -0.62   0.537     .9621337    1.020315
        male |   1.262749   .2371734     1.24   0.214     .8738595    1.824703
         age |   .9817134   .0125189    -1.45   0.148     .9574809    1.006559
pyacctrati~2 |   1.025413   .1749103     0.15   0.883     .7340149    1.432495
pyperstudlep |   1.012516   .0144577     0.87   0.384     .9845726    1.041253
pyperstude~s |   .9851516   .0089671    -1.64   0.100     .9677323    1.002884
pyperstudw~e |   .9038524   .0701525    -1.30   0.193     .7763035    1.052358
pyperstudb~k |   .9124498   .0723246    -1.16   0.248     .7811585    1.065808
pyperstudl~o |   .9207176   .0727689    -1.05   0.296     .7885909    1.074982
pyperstudm~e |   .9609154   .0177586    -2.16   0.031     .9267321    .9963596
       Asian |  (omitted)
       Black |   1.299169   .4201203     0.81   0.418     .6892983    2.448634
      Latino |   .6663091   .5780771    -0.47   0.640     .1216717    3.648901
       Other |   2.830136   3.544398     0.83   0.406     .2430983    32.94828
   AsianMale |  (omitted)
   BlackMale |   1.729205   .8171149     1.16   0.246     .6848907    4.365876
```

```
  LatinoMale |   3.588589   3.749468     1.22   0.221     .4629802    27.81539
   OtherMale |   4.81e-07   .0004638    -0.02   0.988            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9917175    .010015    -0.82   0.410     .9722814    1.011542
       exper |   1.033163   .0140176     2.40   0.016     1.006052    1.061006
        male |   1.588586    .272454     2.70   0.007     1.135073      2.2233
         age |   .9882374    .012002    -0.97   0.330     .9649917    1.012043
pyacctrati~2 |   1.518105   .2159756     2.93   0.003     1.148694    2.006316
pyperstudlep |   1.039183   .0151817     2.63   0.009     1.009849    1.069368
pyperstude~s |   1.034875   .0078965     4.49   0.000     1.019513    1.050468
pyperstudw~e |   .8626745   .0660558    -1.93   0.054     .7424542    1.002361
pyperstudb~k |   .8522224   .0664844    -2.05   0.040     .7313886    .9930194
pyperstudl~o |   .8259506   .0642162    -2.46   0.014     .7092098    .9619079
pyperstudm~e |   .9911042    .013234    -0.67   0.503     .9655026    1.017385
       Asian |  (omitted)
       Black |   1.337275   .4175478     0.93   0.352      .725176    2.466028
      Latino |   .6818566   .4943384    -0.53   0.597     .1646575    2.823609
       Other |   2.368134    3.42771     0.60   0.551     .1387876    40.40748
   AsianMale |  (omitted)
   BlackMale |    .980682   .4679851    -0.04   0.967     .3848856    2.498761
  LatinoMale |   1.723927   1.742223     0.54   0.590     .2378392    12.49552
   OtherMale |   6.09e-07   .0005126    -0.02   0.986            0           .
------------------------------------------------------------------------------


--------->  region = 8

note: AsianMale omitted because of collinearity
note: LatinoMale omitted because of collinearity
Iteration 0:   log likelihood = -397.35957
Iteration 1:   log likelihood = -358.28999
Iteration 2:   log likelihood = -356.80258
Iteration 3:   log likelihood = -356.69057
Iteration 4:   log likelihood = -356.66601
Iteration 5:   log likelihood = -356.66082
Iteration 6:   log likelihood = -356.65988
Iteration 7:   log likelihood = -356.65979
Iteration 8:   log likelihood = -356.65977

Multinomial logistic regression                 Number of obs   =        376
                                                LR chi2(34)     =      81.40
                                                Prob > chi2     =     0.0000
Log likelihood = -356.65977                     Pseudo R2       =     0.1024

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.05466   .0241001     2.33   0.020     1.008467     1.10297
       exper |   1.007406    .030282     0.25   0.806     .9497684     1.06854
        male |   3.358642   1.114235     3.65   0.000     1.752977    6.435041
         age |   .9370445   .0251432    -2.42   0.015     .8890381    .9876431
pyacctrati~2 |   1.034837   .2310392     0.15   0.878     .6680843    1.602922
pyperstudlep |   1.023916    .032255     0.75   0.453     .9626096    1.089127
pyperstude~s |   .9698117   .0136108    -2.18   0.029     .9434986    .9968586
pyperstudw~e |   1.016316   .1533125     0.11   0.915     .7561778    1.365946
pyperstudb~k |   1.054486   .1597057     0.35   0.726     .7836519    1.418921
pyperstudl~o |   1.032145   .1565492     0.21   0.835     .7667182    1.389458
pyperstudm~e |    1.05753   .0385219     1.54   0.125      .984661    1.135792
       Asian |   .8943782   2445.191    -0.00   1.000            0           .
       Black |   2.362894    1.26023     1.61   0.107     .8307361    6.720871
      Latino |    1904972   1.16e+09     0.02   0.981            0           .
       Other |   3.553109   3.642495     1.24   0.216     .4764234    26.49866
   AsianMale |  (omitted)
```

```
   BlackMale |   .3766444   .4159933    -0.88   0.377     .0432318    3.281407
  LatinoMale |  (omitted)
   OtherMale |   1.20e-07   .0001859    -0.01   0.992            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.005956   .0181552     0.33   0.742     .9709941    1.042176
       exper |   1.009069   .0222207     0.41   0.682     .9664441    1.053575
        male |   2.202005   .6268194     2.77   0.006     1.260423    3.846981
         age |   1.012119   .0206115     0.59   0.554      .972517    1.053334
pyacctrati~2 |   1.561151   .3045568     2.28   0.022     1.065095    2.288239
pyperstudlep |   .9871415   .0323761    -0.39   0.693      .925682    1.052681
pyperstude~s |   1.027709   .0125016     2.25   0.025     1.003496    1.052506
pyperstudw~e |   1.022583   .1321216     0.17   0.863     .7938165    1.317277
pyperstudb~k |   1.004219   .1301372     0.03   0.974     .7789702    1.294601
pyperstudl~o |    1.00822   .1315648     0.06   0.950      .780693    1.302058
pyperstudm~e |   1.017743   .0304743     0.59   0.557     .9597335    1.079259
       Asian |    1262547   1.99e+09     0.01   0.993            0           .
       Black |   1.697152   .9416537     0.95   0.340      .572054    5.035056
      Latino |    1324768   8.07e+08     0.02   0.982            0           .
       Other |   1.992036   2.152899     0.64   0.524     .2395292     16.5667
   AsianMale |  (omitted)
   BlackMale |   1.146649   1.264198     0.12   0.901     .1321199    9.951604
  LatinoMale |  (omitted)
   OtherMale |   5.34e-07   .0007123    -0.01   0.991            0           .
------------------------------------------------------------------------------


--------->  region = 9

note: AsianMale omitted because of collinearity
note: LatinoMale omitted because of collinearity
Iteration 0:   log likelihood = -230.21821
Iteration 1:   log likelihood = -201.55504
Iteration 2:   log likelihood = -200.01786
Iteration 3:   log likelihood = -199.67397
Iteration 4:   log likelihood = -199.60954
Iteration 5:   log likelihood = -199.59495
Iteration 6:   log likelihood = -199.59176
Iteration 7:   log likelihood = -199.59097
Iteration 8:   log likelihood = -199.59081
Iteration 9:   log likelihood = -199.59078
Iteration 10:  log likelihood = -199.59077

Multinomial logistic regression                 Number of obs   =        216
                                                LR chi2(34)     =      61.25
                                                Prob > chi2     =     0.0028
Log likelihood = -199.59077                     Pseudo R2       =     0.1330

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |   .9900113   .0237753    -0.42   0.676     .9444923    1.037724
       exper |   .9578024   .0328765    -1.26   0.209     .8954853    1.024456
        male |   .6691789   .2492174    -1.08   0.281     .3225043     1.38851
         age |   1.017086   .0302322     0.57   0.569     .9595245      1.0781
pyacctrati~2 |   .3707673    .113494    -3.24   0.001     .2034903    .6755526
pyperstudlep |   .9962543   .0526697    -0.07   0.943      .898192    1.105023
pyperstude~s |   .9581204   .0161747    -2.53   0.011     .9269374    .9903525
pyperstudw~e |   1.107394    .135248     0.84   0.404     .8716528    1.406893
pyperstudb~k |   1.107019   .1457796     0.77   0.440      .855191    1.433002
pyperstudl~o |   1.157375   .1419522     1.19   0.233     .9100681    1.471885
pyperstudm~e |   1.083604   .0433657     2.01   0.045     1.001857    1.172022
       Asian |   5.84e-08   .0002243    -0.00   0.997            0           .
       Black |   3.05e-07   .0004623    -0.01   0.992            0           .
      Latino |   3.53e-08   .0000963    -0.01   0.995            0           .
       Other |   1.203137   14645.66     0.00   1.000            0           .
```

```
   AsianMale |  (omitted)
   BlackMale |   1.10e+13   2.46e+16     0.01   0.989           0           .
  LatinoMale |  (omitted)
   OtherMale |   1.43e-07   .0017735    -0.00   0.999           0           .
-------------+------------------------------------------------------------------
2            |
      tenure |   .9968959    .031613    -0.10   0.922     .9368218    1.060822
       exper |   .9578258   .0407586    -1.01   0.311      .881181    1.041137
        male |   .4240845   .1919803    -1.89   0.058     .1746301    1.029878
         age |   1.002081   .0340428     0.06   0.951      .937531    1.071075
pyacctrati~2 |   .7423427    .250795    -0.88   0.378     .3828532    1.439384
pyperstudlep |    1.05025   .0638041     0.81   0.420     .9323543    1.183053
pyperstude~s |   .9623777   .0195957    -1.88   0.060     .9247272    1.001561
pyperstudw~e |   .8525543   .1202451    -1.13   0.258     .6466476    1.124026
pyperstudb~k |   .8768588   .1328177    -0.87   0.386     .6516258    1.179943
pyperstudl~o |   .8721026   .1247369    -0.96   0.339      .658901     1.15429
pyperstudm~e |   1.029571   .0484238     0.62   0.536     .9389052    1.128992
       Asian |   9.85e-08   .0005003    -0.00   0.997           0           .
       Black |   .4850794   .6996586    -0.50   0.616     .0287127    8.195039
      Latino |   5.64e-08   .0001904    -0.00   0.996           0           .
       Other |   1.13e+08   9.57e+11     0.00   0.998           0           .
   AsianMale |  (omitted)
   BlackMale |   3.23e+07   5.27e+10     0.01   0.992           0           .
  LatinoMale |  (omitted)
   OtherMale |   2.45e-08   .0002076    -0.00   0.998           0           .
-------------+------------------------------------------------------------------
3            |  (base outcome)
-------------------------------------------------------------------------------


---------->  region = 10

Iteration 0:   log likelihood = -3905.3704
Iteration 1:   log likelihood = -3667.3031
Iteration 2:   log likelihood = -3661.4797
Iteration 3:   log likelihood = -3661.4568
Iteration 4:   log likelihood = -3661.4568

Multinomial logistic regression                 Number of obs   =       3671
                                                LR chi2(38)     =     487.83
                                                Prob > chi2     =     0.0000
Log likelihood = -3661.4568                     Pseudo R2       =     0.0625

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.017742   .0064674     2.77   0.006     1.005145    1.030497
       exper |   1.024293   .0082161     2.99   0.003     1.008316    1.040524
        male |   1.455716   .1536646     3.56   0.000     1.183653    1.790313
         age |   .9602176   .0062805    -6.21   0.000     .9479867    .9726064
pyacctrati~2 |   1.095563   .0697264     1.43   0.152      .967082    1.241114
pyperstudlep |   .9994503   .0044389    -0.12   0.901     .9907879    1.008188
pyperstude~s |   .9898728   .0036405    -2.77   0.006     .9827633    .9970338
pyperstudw~e |   .9885639   .0073799    -1.54   0.123     .9742049    1.003135
pyperstudb~k |   .9919213   .0081973    -0.98   0.326     .9759844    1.008118
pyperstudl~o |   .9961496   .0080626    -0.48   0.634     .9804718    1.012078
pyperstudm~e |   1.015798    .006475     2.46   0.014     1.003186    1.028568
       Asian |   1.136225   .6799841     0.21   0.831     .3516047    3.671755
       Black |   1.013956   .1307576     0.11   0.914      .787499    1.305534
      Latino |   1.777679   .3102161     3.30   0.001     1.262739    2.502611
       Other |   1.128511   .4926994     0.28   0.782     .4795982    2.655425
   AsianMale |   1.099094     1.0358     0.10   0.920     .1733214     6.96976
   BlackMale |   1.351015   .2754325     1.48   0.140     .9059931     2.01463
  LatinoMale |   1.146353   .3130202     0.50   0.617     .6712611    1.957696
```

```
   OtherMale |   .6193285   .4207403    -0.71   0.481     .1635528    2.345223
-------------+----------------------------------------------------------------
3            |
      tenure |   1.025668   .0065325     3.98   0.000     1.012944    1.038551
       exper |   1.073196    .009924     7.64   0.000     1.053921    1.092824
        male |   1.469501   .1734916     3.26   0.001     1.165939    1.852099
         age |   .9639751   .0077205    -4.58   0.000     .9489615    .9792263
pyacctrati~2 |   1.723122   .1186251     7.90   0.000     1.505625    1.972039
pyperstudlep |   1.022704   .0052799     4.35   0.000     1.012407    1.033104
pyperstude~s |   1.010527   .0040301     2.63   0.009     1.002659    1.018457
pyperstudw~e |   1.006393   .0081622     0.79   0.432     .9905218    1.022518
pyperstudb~k |   .9968751   .0091934    -0.34   0.734     .9790183    1.015058
pyperstudl~o |   .9833964   .0086273    -1.91   0.056     .9666317    1.000452
pyperstudm~e |   1.006004   .0077077     0.78   0.435     .9910104    1.021225
       Asian |   1.267748   .9002705     0.33   0.738     .3151852    5.099174
       Black |    .875384   .1374038    -0.85   0.396     .6435623    1.190712
      Latino |   1.906349   .3677018     3.34   0.001     1.306232    2.782175
       Other |   .8497981   .4658146    -0.30   0.767      .290223    2.488282
   AsianMale |   .5081087   .6835885    -0.50   0.615     .0363735    7.097869
   BlackMale |   1.541848   .3843456     1.74   0.082     .9459267    2.513192
  LatinoMale |    1.22067   .3755559     0.65   0.517     .6679043     2.23091
   OtherMale |   1.274964   .9884536     0.31   0.754     .2789834    5.826627
------------------------------------------------------------------------------


---------->  region = 11

Iteration 0:   log likelihood = -2903.2908
Iteration 1:   log likelihood =  -2736.515
Iteration 2:   log likelihood = -2732.3081
Iteration 3:   log likelihood = -2732.2962
Iteration 4:   log likelihood = -2732.2962

Multinomial logistic regression                 Number of obs   =       2702
                                                LR chi2(38)     =     341.99
                                                Prob > chi2     =     0.0000
Log likelihood = -2732.2962                     Pseudo R2       =     0.0589

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.007283   .0076453     0.96   0.339     .9924095     1.02238
       exper |   1.023876   .0093597     2.58   0.010     1.005694    1.042386
        male |   1.182698    .126811     1.56   0.118     .9585316    1.459289
         age |   .9621373   .0071323    -5.21   0.000     .9482592    .9762184
pyacctrati~2 |    1.00394   .0772746     0.05   0.959     .8633554    1.167417
pyperstudlep |   1.001787   .0056365     0.32   0.751     .9908002    1.012895
pyperstude~s |    .999011   .0043514    -0.23   0.820     .9905187    1.007576
pyperstudw~e |   .9947905   .0103437    -0.50   0.615     .9747224    1.015272
pyperstudb~k |   .9911408   .0118795    -0.74   0.458     .9681289      1.0147
pyperstudl~o |   .9996432   .0113907    -0.03   0.975     .9775654     1.02222
pyperstudm~e |   .9999619   .0075605    -0.01   0.996     .9852528     1.01489
       Asian |   .5033147   .4269482    -0.81   0.418     .0954528    2.653938
       Black |   1.129464   .2076043     0.66   0.508     .7877979    1.619309
      Latino |   1.407561   .3250855     1.48   0.139     .8951103    2.213389
       Other |   1.111403   .5211818     0.23   0.822     .4433114    2.786342
   AsianMale |   5.664748   8.144207     1.21   0.228     .3383827    94.83157
   BlackMale |   1.421497   .4317084     1.16   0.247     .7838554    2.577838
  LatinoMale |   1.147227    .405821     0.39   0.698     .5735151    2.294849
   OtherMale |   1.247838   .9423273     0.29   0.769     .2840261    5.482243
-------------+----------------------------------------------------------------
3            |
      tenure |   1.012264   .0075663     1.63   0.103     .9975426    1.027203
       exper |   1.091567   .0115041     8.31   0.000     1.069251    1.114349
```

```
        male |   1.487223   .1811975     3.26   0.001     1.171302    1.888353
         age |   .9676553   .0088555    -3.59   0.000     .9504535    .9851684
pyacctrati~2 |   1.568893   .1351308     5.23   0.000      1.32519    1.857413
pyperstudlep |   1.020335   .0068926     2.98   0.003     1.006915    1.033934
pyperstude~s |   1.023682   .0050075     4.78   0.000     1.013915    1.033544
pyperstudw~e |   1.014008   .0125076     1.13   0.259     .9897874    1.038821
pyperstudb~k |   1.001117   .0142536     0.08   0.937     .9735672    1.029447
pyperstudl~o |   .9891702    .013391    -0.80   0.421     .9632695    1.015767
pyperstudm~e |   .9917566   .0089003    -0.92   0.356     .9744648    1.009355
       Asian |   .7119293   .6295615    -0.38   0.701     .1258104    4.028629
       Black |   1.174111   .2680331     0.70   0.482     .7505711    1.836651
      Latino |   1.716271   .4559884     2.03   0.042      1.01961    2.888935
       Other |   .8520146   .5290338    -0.26   0.796     .2523005    2.877239
   AsianMale |   5.668438   8.764127     1.12   0.262     .2737773    117.3625
   BlackMale |   1.404914   .5343918     0.89   0.371     .6666154    2.960902
  LatinoMale |    .902964   .3770911    -0.24   0.807     .3982869    2.047127
   OtherMale |   1.405535   1.339554     0.36   0.721     .2170696    9.100907
------------------------------------------------------------------------------


--------->  region = 12

Iteration 0:   log likelihood = -943.95923
Iteration 1:   log likelihood = -878.13905
Iteration 2:   log likelihood = -876.55561
Iteration 3:   log likelihood = -876.24667
Iteration 4:   log likelihood = -876.18918
Iteration 5:   log likelihood =  -876.1761
Iteration 6:   log likelihood = -876.17322
Iteration 7:   log likelihood = -876.17251
Iteration 8:   log likelihood = -876.17237
Iteration 9:   log likelihood = -876.17233
Iteration 10:  log likelihood = -876.17233

Multinomial logistic regression                 Number of obs   =        869
                                                LR chi2(38)     =     135.57
                                                Prob > chi2     =     0.0000
Log likelihood = -876.17233                     Pseudo R2       =     0.0718

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.002697   .0127976     0.21   0.833     .9779255    1.028096
       exper |   1.021841    .016865     1.31   0.190     .9893153    1.055436
        male |   1.079536    .215633     0.38   0.702     .7298156     1.59684
         age |   .9658685   .0130977    -2.56   0.010     .9405357    .9918836
pyacctrati~2 |   1.107427   .1799655     0.63   0.530     .8053565    1.522797
pyperstudlep |   1.013636   .0173249     0.79   0.428     .9802424    1.048167
pyperstude~s |   1.004323    .008065     0.54   0.591     .9886392    1.020255
pyperstudw~e |   .9374823   .0542816    -1.11   0.265     .8369072    1.050144
pyperstudb~k |   .9626581   .0593016    -0.62   0.537     .8531716    1.086195
pyperstudl~o |   .9460595   .0549801    -0.95   0.340     .8442111    1.060195
pyperstudm~e |   .9929293   .0104259    -0.68   0.499     .9727037    1.013575
       Asian |   7.81e-08   .0001221    -0.01   0.992            0           .
       Black |   .9140984   .2902047    -0.28   0.777     .4906327    1.703058
      Latino |   .4481155   .2111799    -1.70   0.089     .1779306    1.128572
       Other |    6415401   9.74e+09     0.01   0.992            0           .
   AsianMale |   4.91e+14   1.64e+18     0.01   0.992            0           .
   BlackMale |   1.186977   .6393571     0.32   0.750     .4129985    3.411428
  LatinoMale |   1.957321   1.393673     0.94   0.346     .4848201    7.902122
   OtherMale |   3.69e-14   9.95e-11    -0.01   0.991            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.000862   .0117702     0.07   0.942     .9780571      1.0242
```

```
       exper |   1.037038   .0166334     2.27   0.023     1.004944    1.070157
        male |   1.208584   .2367534     0.97   0.333     .8232509    1.774277
         age |   .9919227   .0137326    -0.59   0.558     .9653692    1.019207
pyacctrati~2 |   1.364121   .2142958     1.98   0.048     1.002615    1.855974
pyperstudlep |   1.031465   .0182503     1.75   0.080     .9963086    1.067863
pyperstude~s |   1.023944   .0083534     2.90   0.004     1.007702    1.040448
pyperstudw~e |   1.052727    .067129     0.81   0.420      .929046    1.192873
pyperstudb~k |   1.056649   .0712997     0.82   0.414     .9257502    1.206056
pyperstudl~o |   1.030689   .0663248     0.47   0.639      .908558    1.169236
pyperstudm~e |    .969298   .0123391    -2.45   0.014     .9454131    .9937864
       Asian |   .4067924   .4676292    -0.78   0.434     .0427437    3.871449
       Black |   .5937275   .2343713    -1.32   0.187     .2738919    1.287049
      Latino |   .2775836   .1831885    -1.94   0.052     .0761469    1.011896
       Other |    6191391   9.40e+09     0.01   0.992            0           .
   AsianMale |   4.304587   19814.29     0.00   1.000            0           .
   BlackMale |   2.082027   1.251396     1.22   0.222      .641024    6.762362
  LatinoMale |   4.650813   3.946363     1.81   0.070     .8815707    24.53582
   OtherMale |   4.24e-07   .0006448    -0.01   0.992            0           .
------------------------------------------------------------------------------


---------->  region = 13

Iteration 0:   log likelihood = -1643.0697
Iteration 1:   log likelihood = -1560.5627
Iteration 2:   log likelihood = -1559.0799
Iteration 3:   log likelihood = -1559.0215
Iteration 4:   log likelihood = -1559.0143
Iteration 5:   log likelihood = -1559.0134
Iteration 6:   log likelihood = -1559.0132
Iteration 7:   log likelihood = -1559.0132
Iteration 8:   log likelihood = -1559.0131

Multinomial logistic regression                 Number of obs   =       1507
                                                LR chi2(38)     =     168.11
                                                Prob > chi2     =     0.0000
Log likelihood = -1559.0131                     Pseudo R2       =     0.0512

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9924514   .0105114    -0.72   0.474     .9720619    1.013269
       exper |    .968535   .0106291    -2.91   0.004     .9479248    .9895934
        male |   1.093236   .1712369     0.57   0.569     .8042438    1.486073
         age |   .9969587   .0091105    -0.33   0.739     .9792614    1.014976
pyacctrati~2 |   .9260815   .1012893    -0.70   0.483     .7473943    1.147489
pyperstudlep |    .993765   .0071673    -0.87   0.386     .9798162    1.007912
pyperstude~s |   1.000348   .0067895     0.05   0.959     .9871287    1.013744
pyperstudw~e |   .9742233   .0167029    -1.52   0.128     .9420301    1.007517
pyperstudb~k |   .9713583   .0211226    -1.34   0.181     .9308286    1.013653
pyperstudl~o |   .9770906   .0178614    -1.27   0.205     .9427027    1.012733
pyperstudm~e |   1.011719   .0104762     1.13   0.261     .9913933    1.032462
       Asian |   1.076516   1.101466     0.07   0.943     .1449077    7.997416
       Black |   1.670772   .4320645     1.98   0.047     1.006457    2.773571
      Latino |   1.565546   .3441564     2.04   0.041     1.017525    2.408723
       Other |    1.42692   1.107633     0.46   0.647     .3116469    6.533358
   AsianMale |   .7710957    1.35524    -0.15   0.882     .0246081    24.16232
   BlackMale |   .6266224   .2919438    -1.00   0.316     .2514378    1.561641
  LatinoMale |   1.570977   .5977674     1.19   0.235     .7452158    3.311752
   OtherMale |   .6111689    .634464    -0.47   0.635     .0798943    4.675271
-------------+----------------------------------------------------------------
3            |
      tenure |   1.021115   .0099357     2.15   0.032     1.001826    1.040776
       exper |   1.023499   .0122215     1.95   0.052     .9998239    1.047735
```

```
       male |   .9782403   .1625683    -0.13   0.895     .7062998    1.354884
        age |   .9949673   .0105403    -0.48   0.634     .9745217    1.015842
pyacctrati~2 |   1.347635   .1537062     2.62   0.009     1.077674    1.685222
pyperstudlep |   .9937204   .0073929    -0.85   0.397     .9793357    1.008316
pyperstude~s |   1.021904   .0073252     3.02   0.003     1.007647    1.036362
pyperstudw~e |   .9776634   .0182197    -1.21   0.225     .9425977    1.014034
pyperstudb~k |   .9593826   .0227967    -1.75   0.081     .9157263     1.00512
pyperstudl~o |   .9686381   .0191765    -1.61   0.108     .9317726    1.006962
pyperstudm~e |   1.002012   .0124534     0.16   0.872     .9778989     1.02672
       Asian |   3.149141   2.783311     1.30   0.194     .5570231    17.80373
       Black |   .7737772   .2478824    -0.80   0.423     .4129813    1.449778
      Latino |   1.001801   .2419573     0.01   0.994     .6240183    1.608295
       Other |   1.657346   1.375508     0.61   0.543      .325808    8.430723
   AsianMale |   1.24e-06    .000965    -0.02   0.986            0           .
   BlackMale |   .7201359   .4478258    -0.53   0.598      .212855     2.43638
  LatinoMale |   2.547516   1.053386     2.26   0.024     1.132789    5.729077
   OtherMale |   .7081234   .7914221    -0.31   0.757     .0792096    6.330527
------------------------------------------------------------------------------


---------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -244.69089
Iteration 1:   log likelihood = -218.89126
Iteration 2:   log likelihood = -218.08391
Iteration 3:   log likelihood =  -215.0936
Iteration 4:   log likelihood = -214.87739
Iteration 5:   log likelihood = -214.84864
Iteration 6:   log likelihood = -214.84205
Iteration 7:   log likelihood = -214.84072
Iteration 8:   log likelihood = -214.84048
Iteration 9:   log likelihood = -214.84043
Iteration 10:  log likelihood = -214.84041

Multinomial logistic regression                 Number of obs   =        247
                                                LR chi2(34)     =      59.70
                                                Prob > chi2     =     0.0042
Log likelihood = -214.84041                     Pseudo R2       =     0.1220

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.015353   .0300065     0.52   0.606     .9582122    1.075901
       exper |   .9876357   .0402436    -0.31   0.760     .9118272    1.069747
        male |   .8753482    .398238    -0.29   0.770     .3588627    2.135174
         age |   1.013492   .0375806     0.36   0.718     .9424479    1.089891
pyacctrati~2 |   .7431072   .2988089    -0.74   0.460     .3378914    1.634278
pyperstudlep |   .9866157   .0775081    -0.17   0.864     .8458201    1.150848
pyperstude~s |   1.008508   .0193603     0.44   0.659     .9712675    1.047176
pyperstudw~e |   .8146871   .1478091    -1.13   0.259     .5708959    1.162585
pyperstudb~k |   .8437778   .1725018    -0.83   0.406     .5652083    1.259643
pyperstudl~o |   .8161328   .1468743    -1.13   0.259     .5735554    1.161305
pyperstudm~e |   .9020772   .0546803    -1.70   0.089     .8010272    1.015875
       Asian |  (omitted)
       Black |   .4078157   1597.581    -0.00   1.000            0           .
      Latino |   1.137701   2903.644     0.00   1.000            0           .
       Other |   7.33e-08   .0002287    -0.01   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   1.699335    9414.41     0.00   1.000            0           .
  LatinoMale |   19.37951   49460.49     0.00   0.999            0           .
   OtherMale |   2.88e+14   1.02e+18     0.01   0.993            0           .
-------------+----------------------------------------------------------------
```

```
3            |
      tenure |    1.00091   .0202203     0.05   0.964     .9620535    1.041336
       exper |   1.033338   .0318276     1.06   0.287      .972803    1.097641
        male |   2.148536   .7086613     2.32   0.020     1.125607     4.10108
         age |    .975315   .0270675    -0.90   0.368     .9236808    1.029836
pyacctrati~2 |   1.628739   .4226436     1.88   0.060     .9794269    2.708513
pyperstudlep |   1.019551   .0440165     0.45   0.654     .9368293    1.109577
pyperstude~s |   1.049508   .0148418     3.42   0.001     1.020818    1.079005
pyperstudw~e |   .7843261   .1115411    -1.71   0.088     .5935333     1.03645
pyperstudb~k |   .7349939    .118205    -1.91   0.056     .5362776    1.007344
pyperstudl~o |   .7791427   .1103405    -1.76   0.078     .5902985    1.028401
pyperstudm~e |   .9316843   .0342739    -1.92   0.054     .8668732    1.001341
       Asian |  (omitted)
       Black |    3068818   5.66e+09     0.01   0.994            0           .
      Latino |    3106495   3.98e+09     0.01   0.991            0           .
       Other |   1.39e-06   .0025095    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   1.550268   4041.894     0.00   1.000            0           .
  LatinoMale |   8.25e-07   .0010563    -0.01   0.991            0           .
   OtherMale |   1.50e+12   3.73e+15     0.01   0.991            0           .
------------------------------------------------------------------------------


---------->  region = 15

note: Asian omitted because of collinearity
note: Other omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -291.40685
Iteration 1:   log likelihood =  -262.6446
Iteration 2:   log likelihood = -260.90496
Iteration 3:   log likelihood = -260.88352
Iteration 4:   log likelihood = -260.88156
Iteration 5:   log likelihood = -260.88116
Iteration 6:   log likelihood = -260.88107
Iteration 7:   log likelihood = -260.88105

Multinomial logistic regression                 Number of obs   =        279
                                                LR chi2(30)     =      61.05
                                                Prob > chi2     =     0.0007
Log likelihood = -260.88105                     Pseudo R2       =     0.1048

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.041088   .0337624     1.24   0.214     .9769743     1.10941
       exper |   .9384606   .0339097    -1.76   0.079     .8742977    1.007332
        male |    1.08558   .5023557     0.18   0.859     .4382942    2.688798
         age |   .9816244   .0266064    -0.68   0.494     .9308378    1.035182
pyacctrati~2 |   1.194744   .4349449     0.49   0.625     .5853233    2.438673
pyperstudlep |   .9197293   .0291263    -2.64   0.008     .8643784    .9786247
pyperstude~s |   1.010787   .0137134     0.79   0.429     .9842637    1.038026
pyperstudw~e |   1.309047   .3309518     1.07   0.287      .797545    2.148597
pyperstudb~k |    1.48456   .4107322     1.43   0.153     .8631703    2.553284
pyperstudl~o |   1.337307   .3389148     1.15   0.251     .8137861    2.197616
pyperstudm~e |   .9515027   .0347088    -1.36   0.173     .8858495    1.022022
       Asian |  (omitted)
       Black |   795116.3   5.87e+08     0.02   0.985            0           .
      Latino |   3.251507   1.974903     1.94   0.052     .9887375    10.69272
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   .0000102   .0075287    -0.02   0.988            0           .
  LatinoMale |   .8374191   .6917851    -0.21   0.830     .1658717    4.227791
```

```
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9785957   .0196934    -1.08   0.282     .9407486    1.017965
       exper |   1.039833   .0256802     1.58   0.114     .9906998    1.091404
        male |   1.061152   .3529881     0.18   0.858     .5528776    2.036697
         age |   .9784215   .0216087    -0.99   0.323     .9369727    1.021704
pyacctrati~2 |   1.918735   .5029963     2.49   0.013     1.147817    3.207432
pyperstudlep |   .9566258   .0244002    -1.74   0.082      .909978    1.005665
pyperstude~s |   1.023116    .011356     2.06   0.040     1.001099    1.045617
pyperstudw~e |   1.012901   .1645732     0.08   0.937     .7366586    1.392733
pyperstudb~k |    1.01493    .183706     0.08   0.935     .7118126    1.447127
pyperstudl~o |   1.010532   .1641128     0.06   0.949     .7350428    1.389271
pyperstudm~e |   .9620193   .0264018    -1.41   0.158     .9116398    1.015183
       Asian |  (omitted)
       Black |    1.41893   1552.627     0.00   1.000            0           .
      Latino |   1.335822   .7470241     0.52   0.605     .4464121    3.997248
       Other |  (omitted)
   AsianMale |  (omitted)
   BlackMale |   1.159918   1269.211     0.00   1.000            0           .
  LatinoMale |   .7311212   .5913006    -0.39   0.699      .149821    3.567845
   OtherMale |  (omitted)
-------------------------------------------------------------------------------


---------->  region = 16

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -532.29223
Iteration 1:   log likelihood = -488.87109
Iteration 2:   log likelihood = -487.65959
Iteration 3:   log likelihood = -487.58937
Iteration 4:   log likelihood = -487.57849
Iteration 5:   log likelihood = -487.57586
Iteration 6:   log likelihood = -487.57531
Iteration 7:   log likelihood = -487.57519
Iteration 8:   log likelihood = -487.57516

Multinomial logistic regression                 Number of obs   =        487
                                                LR chi2(34)     =      89.43
                                                Prob > chi2     =     0.0000
Log likelihood = -487.57516                     Pseudo R2       =     0.0840

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.044911   .0204905     2.24   0.025     1.005513    1.085854
       exper |   .9727365   .0250452    -1.07   0.283     .9248667    1.023084
        male |   .7744783   .2055901    -0.96   0.336     .4603122    1.303065
         age |   .9670493   .0210652    -1.54   0.124     .9266313     1.00923
pyacctrati~2 |   1.109618     .21204     0.54   0.586     .7629829    1.613734
pyperstudlep |    .997563   .0157105    -0.15   0.877     .9672414    1.028835
pyperstude~s |    .981003   .0093008    -2.02   0.043     .9629421    .9994027
pyperstudw~e |   .9427024   .0350728    -1.59   0.113     .8764075    1.014012
pyperstudb~k |    .965647   .0398142    -0.85   0.397     .8906824    1.046921
pyperstudl~o |   .9617438     .03442    -1.09   0.276     .8965935    1.031628
pyperstudm~e |   1.031221   .0258157     1.23   0.219     .9818442    1.083081
       Asian |  (omitted)
       Black |   .8027713   .7235555    -0.24   0.807     .1372098    4.696762
      Latino |   2.683132   1.695703     1.56   0.118     .7774887    9.259549
       Other |   2.208075   2.819656     0.62   0.535     .1807385    26.97595
   AsianMale |  (omitted)
   BlackMale |     241474   1.00e+08     0.03   0.976            0           .
```

```
  LatinoMale |   1.303667   1.369198     0.25   0.801     .1664095    10.21305
   OtherMale |    1874670   2.02e+09     0.01   0.989            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.024318   .0170046     1.45   0.148      .991526    1.058195
       exper |   1.010511    .021202     0.50   0.618     .9697986    1.052932
        male |   2.019125    .501469     2.83   0.005     1.240964    3.285241
         age |   .9998334   .0200441    -0.01   0.993     .9613094    1.039901
pyacctrati~2 |    1.78445   .3147703     3.28   0.001     1.262861    2.521466
pyperstudlep |    1.01781   .0156664     1.15   0.251     .9875629    1.048983
pyperstude~s |   1.006691   .0080679     0.83   0.405     .9910016    1.022628
pyperstudw~e |   1.040047   .0471223     0.87   0.386     .9516708     1.13663
pyperstudb~k |   1.021745   .0512257     0.43   0.668     .9261194    1.127244
pyperstudl~o |    1.03269   .0456087     0.73   0.466      .947058    1.126064
pyperstudm~e |   1.009772   .0226839     0.43   0.665     .9662768    1.055225
       Asian |  (omitted)
       Black |   1.441472   1.417084     0.37   0.710     .2098967    9.899347
      Latino |    2.02103   1.447074     0.98   0.326     .4967127    8.223187
       Other |   2.387629   3.425524     0.61   0.544     .1434665     39.7359
   AsianMale |  (omitted)
   BlackMale |   96441.58   4.00e+07     0.03   0.978            0           .
  LatinoMale |   .9328838   1.065411    -0.06   0.951     .0994725    8.748874
   OtherMale |   .2227468    349.432    -0.00   0.999            0           .
------------------------------------------------------------------------------


--------->  region = 17

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -350.11603
Iteration 1:   log likelihood = -316.14231
Iteration 2:   log likelihood = -313.95523
Iteration 3:   log likelihood =  -313.7195
Iteration 4:   log likelihood = -313.67608
Iteration 5:   log likelihood = -313.66615
Iteration 6:   log likelihood = -313.66396
Iteration 7:   log likelihood = -313.66341
Iteration 8:   log likelihood =  -313.6633
Iteration 9:   log likelihood = -313.66328

Multinomial logistic regression                 Number of obs   =        343
                                                LR chi2(32)     =      72.91
                                                Prob > chi2     =     0.0000
Log likelihood = -313.66328                     Pseudo R2       =     0.1041

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.002442   .0297139     0.08   0.934     .9458635    1.062406
       exper |   .9935491   .0348483    -0.18   0.854     .9275424    1.064253
        male |   1.119463   .4297369     0.29   0.769     .5275362    2.375565
         age |    .970201    .027634    -1.06   0.288     .9175233    1.025903
pyacctrati~2 |   .7768767   .2327701    -0.84   0.399     .4318298    1.397628
pyperstudlep |   .9843248   .0367986    -0.42   0.673     .9147798    1.059157
pyperstude~s |   .9856284   .0171386    -0.83   0.405     .9526033    1.019798
pyperstudw~e |   .9460046    .096288    -0.55   0.586      .774916    1.154867
pyperstudb~k |     .94904    .099311    -0.50   0.617     .7730573    1.165084
pyperstudl~o |   .9441093   .0967321    -0.56   0.575     .7723415    1.154078
pyperstudm~e |   1.026922   .0244948     1.11   0.265     .9800179    1.076071
       Asian |  (omitted)
       Black |   5.11e-07   .0007377    -0.01   0.992            0           .
      Latino |   1.406071   1.026687     0.47   0.641     .3361058    5.882185
```

```
       Other |   5.18e-07   .0009369    -0.01   0.994           0           .
   AsianMale |  (omitted)
   BlackMale |   2.88e+12   4.78e+15     0.02   0.986           0           .
  LatinoMale |   2.708837   2.908154     0.93   0.353     .3303312    22.21345
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.019425   .0212491     0.92   0.356     .9786172    1.061935
       exper |   1.020434   .0248368     0.83   0.406      .972898    1.070293
        male |   2.580421   .7743794     3.16   0.002     1.433001    4.646592
         age |   .9918256   .0206024    -0.40   0.693     .9522566    1.033039
pyacctrati~2 |   1.118207   .2573192     0.49   0.627     .7122714    1.755491
pyperstudlep |    1.00947    .025602     0.37   0.710     .9605177    1.060917
pyperstude~s |   1.034631   .0137612     2.56   0.010     1.008008    1.061957
pyperstudw~e |   1.023765   .1094518     0.22   0.826     .8302285    1.262418
pyperstudb~k |    .978707   .1067458    -0.20   0.844     .7903394     1.21197
pyperstudl~o |   1.017969   .1088708     0.17   0.868     .8254661    1.255364
pyperstudm~e |   1.019041    .022228     0.86   0.387     .9763932    1.063552
       Asian |  (omitted)
       Black |   1.407967   2.127784     0.23   0.821     .0728145    27.22496
      Latino |   .2687482   .2276945    -1.55   0.121     .0510708    1.414224
       Other |   1.828097   2.672927     0.41   0.680     .1040942    32.10496
   AsianMale |  (omitted)
   BlackMale |    3947922   3.23e+09     0.02   0.985           0           .
  LatinoMale |   3.456792   4.067767     1.05   0.292     .3443699    34.69935
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 18

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -420.3517
Iteration 1:   log likelihood = -394.36294
Iteration 2:   log likelihood =  -393.8018
Iteration 3:   log likelihood = -393.76717
Iteration 4:   log likelihood = -393.76013
Iteration 5:   log likelihood = -393.75865
Iteration 6:   log likelihood = -393.75832
Iteration 7:   log likelihood = -393.75824
Iteration 8:   log likelihood = -393.75822

Multinomial logistic regression                 Number of obs   =        396
                                                LR chi2(34)     =      53.19
                                                Prob > chi2     =     0.0192
Log likelihood = -393.75822                     Pseudo R2       =     0.0633

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9975607   .0209492    -0.12   0.907     .9573345    1.039477
       exper |   .9723445   .0256824    -1.06   0.288     .9232887    1.024007
        male |   1.172979   .4109273     0.46   0.649     .5903241    2.330719
         age |   1.020861   .0225746     0.93   0.350      .977561    1.066079
pyacctrati~2 |    .710705   .1981095    -1.23   0.221     .4115441    1.227333
pyperstudlep |   1.009648   .0186178     0.52   0.603     .9738089    1.046805
pyperstude~s |   .9982567   .0122732    -0.14   0.887     .9744891    1.022604
pyperstudw~e |   .9328437   .1112921    -0.58   0.560      .738341    1.178585
pyperstudb~k |   .9842511    .124177    -0.13   0.900     .7686258    1.260366
pyperstudl~o |   .9244977   .1082278    -0.67   0.502     .7349514    1.162929
pyperstudm~e |   1.013953   .0137243     1.02   0.306     .9874077    1.041212
       Asian |  (omitted)
       Black |   2.518994   2.460042     0.95   0.344     .3714893    17.08079
```

```
      Latino |   2.607161   1.034244     2.42   0.016     1.198123    5.673277
       Other |   .8223165   1140.578    -0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   .7418228   1.064403    -0.21   0.835     .0445611    12.34936
  LatinoMale |    .444497   .2682485    -1.34   0.179     .1362007    1.450636
   OtherMale |    4467847   7.93e+09     0.01   0.993            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9878025   .0166261    -0.73   0.466     .9557476    1.020932
       exper |   1.070274   .0275388     2.64   0.008     1.017638    1.125634
        male |   1.377325   .4265977     1.03   0.301     .7505759    2.527426
         age |   .9759412   .0224628    -1.06   0.290     .9328932    1.020976
pyacctrati~2 |   1.256215   .3105056     0.92   0.356     .7738695    2.039202
pyperstudlep |   .9904481   .0166876    -0.57   0.569     .9582752    1.023701
pyperstude~s |   1.029733   .0118343     2.55   0.011     1.006798    1.053191
pyperstudw~e |   .9700388   .1060836    -0.28   0.781     .7828914    1.201923
pyperstudb~k |   .9924812   .1135702    -0.07   0.947     .7930834    1.242012
pyperstudl~o |   .9584869   .1031282    -0.39   0.694     .7762495    1.183507
pyperstudm~e |   .9804536   .0170567    -1.13   0.257     .9475866    1.014461
       Asian |  (omitted)
       Black |    3.49283   3.262219     1.34   0.181     .5599839    21.78609
      Latino |   1.449989   .5751762     0.94   0.349     .6663667    3.155122
       Other |    1220986   9.90e+08     0.02   0.986            0           .
   AsianMale |  (omitted)
   BlackMale |   .8512784   1.138502    -0.12   0.904     .0618974    11.70767
  LatinoMale |   .6861255   .3925542    -0.66   0.510     .2235651    2.105732
   OtherMale |   1.07e-06   .0020571    -0.01   0.994            0           .
------------------------------------------------------------------------------


---------->  region = 19

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -865.06154
Iteration 1:   log likelihood = -785.71805
Iteration 2:   log likelihood = -780.67015
Iteration 3:   log likelihood = -780.38207
Iteration 4:   log likelihood = -780.31855
Iteration 5:   log likelihood = -780.30425
Iteration 6:   log likelihood = -780.30115
Iteration 7:   log likelihood = -780.30067
Iteration 8:   log likelihood = -780.30061
Iteration 9:   log likelihood =  -780.3006

Multinomial logistic regression                 Number of obs   =        802
                                                LR chi2(36)     =     169.52
                                                Prob > chi2     =     0.0000
Log likelihood =  -780.3006                     Pseudo R2       =     0.0980

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.005836   .0142411     0.41   0.681     .9783081    1.034139
       exper |   1.034947   .0179759     1.98   0.048     1.000308    1.070785
        male |   .8985258   .2806229    -0.34   0.732     .4871781    1.657194
         age |   .9961549   .0128086    -0.30   0.764     .9713641    1.021578
pyacctrati~2 |   1.003701   .1756323     0.02   0.983     .7122904    1.414333
pyperstudlep |   1.001375   .0064398     0.21   0.831     .9888328    1.014077
pyperstude~s |   .9958934   .0094933    -0.43   0.666     .9774597    1.014675
pyperstudw~e |   .9052828   .0902239    -1.00   0.318     .7446469    1.100571
pyperstudb~k |   .9496561   .0921245    -0.53   0.594     .7852226    1.148524
pyperstudl~o |   .9270665   .0841549    -0.83   0.404      .775966     1.10759
pyperstudm~e |   1.008755   .0137851     0.64   0.524     .9820953    1.036138
       Asian |    1.35675   1.963149     0.21   0.833     .0795893    23.12839
```

```
       Black |   .8240017   .4094834    -0.39   0.697       .31112     2.18237
      Latino |   1.218679   .3042649     0.79   0.428     .7470878    1.987957
       Other |   .2548619    .294273    -1.18   0.236      .026514    2.449818
   AsianMale |  (omitted)
   BlackMale |   2.411362   2.215506     0.96   0.338     .3982881    14.59915
  LatinoMale |   .9119298   .3410783    -0.25   0.805     .4381235    1.898131
   OtherMale |   1.93e-06   .0020819    -0.01   0.990            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.003074   .0154676     0.20   0.842     .9732118    1.033853
       exper |   1.148241   .0255928     6.20   0.000      1.09916    1.199514
        male |   .9928003   .3658432    -0.02   0.984     .4821668    2.044215
         age |   .9673392    .017503    -1.84   0.066     .9336351     1.00226
pyacctrati~2 |    1.26291   .2607313     1.13   0.258      .842635    1.892803
pyperstudlep |   1.032927   .0077528     4.32   0.000     1.017843    1.048234
pyperstude~s |   1.019255   .0123305     1.58   0.115     .9953717    1.043711
pyperstudw~e |   1.022677   .1206554     0.19   0.849     .8115468    1.288734
pyperstudb~k |   1.027034   .1188143     0.23   0.818     .8186764    1.288421
pyperstudl~o |   .9810235   .1062415    -0.18   0.860     .7934091    1.213002
pyperstudm~e |   .9860425   .0206786    -0.67   0.503      .946335    1.027416
       Asian |   1.07e-06   .0017575    -0.01   0.993            0           .
       Black |   .4290232   .3121213    -1.16   0.245     .1030904    1.785433
      Latino |    .956878   .2831778    -0.15   0.882     .5357381    1.709073
       Other |   2.45e-07   .0002162    -0.02   0.986            0           .
   AsianMale |  (omitted)
   BlackMale |   1.131586   1.738185     0.08   0.936      .055743    22.97126
  LatinoMale |   1.190703   .5333247     0.39   0.697     .4949301    2.864593
   OtherMale |   1.41e+07   1.24e+10     0.02   0.985            0           .
------------------------------------------------------------------------------


---------->  region = 20

Iteration 0:   log likelihood = -2165.8402
Iteration 1:   log likelihood = -2062.2141
Iteration 2:   log likelihood =  -2058.886
Iteration 3:   log likelihood = -2058.6614
Iteration 4:   log likelihood = -2058.6158
Iteration 5:   log likelihood = -2058.6063
Iteration 6:   log likelihood = -2058.6042
Iteration 7:   log likelihood = -2058.6036
Iteration 8:   log likelihood = -2058.6035
Iteration 9:   log likelihood = -2058.6035

Multinomial logistic regression                 Number of obs   =       2082
                                                LR chi2(38)     =     214.47
                                                Prob > chi2     =     0.0000
Log likelihood = -2058.6035                     Pseudo R2       =     0.0495

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9993453   .0080163    -0.08   0.935     .9837566    1.015181
       exper |   1.006004   .0104298     0.58   0.564     .9857679    1.026655
        male |    1.29574    .198851     1.69   0.091     .9591534    1.750442
         age |   .9758464   .0084743    -2.82   0.005     .9593776     .992598
pyacctrati~2 |   1.036143   .1008881     0.36   0.715     .8561286    1.254008
pyperstudlep |   .9821481   .0066848    -2.65   0.008     .9691332    .9953378
pyperstude~s |   1.004109   .0052786     0.78   0.435     .9938164    1.014508
pyperstudw~e |   .9705874   .0302734    -0.96   0.338     .9130298    1.031773
pyperstudb~k |   .9658759   .0332344    -1.01   0.313     .9028856    1.033261
pyperstudl~o |    .966696   .0314576    -1.04   0.298     .9069653    1.030361
pyperstudm~e |   1.002064   .0071886     0.29   0.774      .988073    1.016253
       Asian |   1.311809   1.214126     0.29   0.769     .2138226    8.047996
```

```
       Black |   1.425436   .4463544     1.13   0.258     .7716253    2.633232
      Latino |   1.495754   .2212903     2.72   0.006     1.119254    1.998903
       Other |   .3019241   .3247993    -1.11   0.266     .0366611    2.486511
   AsianMale |   1.199049   2.037461     0.11   0.915     .0428993    33.51385
   BlackMale |   1.752426   .8125185     1.21   0.226     .7062801    4.348128
  LatinoMale |    .993726   .2251445    -0.03   0.978      .637402    1.549244
   OtherMale |   3.736065   5.301459     0.93   0.353     .2315065    60.29282
-------------+----------------------------------------------------------------
3            |
      tenure |    1.01364   .0082099     1.67   0.094      .997676     1.02986
       exper |    1.06919   .0135052     5.30   0.000     1.043046     1.09599
        male |   1.359523   .2317832     1.80   0.072     .9733443     1.89892
         age |   .9621057    .010774    -3.45   0.001     .9412191    .9834558
pyacctrati~2 |   1.475197    .151843     3.78   0.000     1.205689    1.804948
pyperstudlep |   1.018192   .0061329     2.99   0.003     1.006243    1.030284
pyperstude~s |   1.020283   .0060894     3.36   0.001     1.008418    1.032288
pyperstudw~e |   1.023868   .0369197     0.65   0.513     .9540042    1.098847
pyperstudb~k |   1.012878   .0399264     0.32   0.745     .9375703    1.094235
pyperstudl~o |   1.003713   .0375789     0.10   0.921     .9326972    1.080136
pyperstudm~e |   .9935922   .0089724    -0.71   0.477     .9761614    1.011334
       Asian |   2.10e-06   .0012197    -0.02   0.982            0           .
       Black |   1.788129   .5594195     1.86   0.063      .968498    3.301405
      Latino |   .9097816   .1511475    -0.57   0.569     .6569342    1.259947
       Other |   .4550726   .4919252    -0.73   0.466      .054695    3.786292
   AsianMale |   916844.1   5.33e+08     0.02   0.981            0           .
   BlackMale |   .8121306   .4389928    -0.38   0.700     .2815228    2.342816
  LatinoMale |   1.075417   .2782263     0.28   0.779     .6476775    1.785646
   OtherMale |   4.47e-06   .0026173    -0.02   0.983            0           .
------------------------------------------------------------------------------
```

by pyschooltype:

```
. bysort pyschooltype: mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian
Black Latino
> Other AsianMale BlackMale LatinoMale OtherMale if validcert2008a==1, rrr iter(20)


---------->  pyschooltype =
no observations


---------->  pyschooltype = B

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -349.52757
Iteration 1:   log likelihood = -328.41839
Iteration 2:   log likelihood = -320.78775
Iteration 3:   log likelihood = -319.93757
Iteration 4:   log likelihood = -319.90013
Iteration 5:   log likelihood =  -319.8917
Iteration 6:   log likelihood = -319.88971
Iteration 7:   log likelihood =  -319.8893
Iteration 8:   log likelihood = -319.88923
Iteration 9:   log likelihood = -319.88922

Multinomial logistic regression                 Number of obs   =        394
                                                LR chi2(36)     =      59.28
                                                Prob > chi2     =     0.0086
Log likelihood = -319.88922                     Pseudo R2       =     0.0848

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
```

```
      tenure |   1.020861   .0319497     0.66   0.509     .9601226    1.085442
       exper |   1.023643    .041176     0.58   0.561     .9460391    1.107613
        male |   .7561549   .3451343    -0.61   0.540     .3090965    1.849812
         age |   .9224745   .0323744    -2.30   0.021     .8611549    .9881604
pyacctrati~2 |   .4443587   .1787789    -2.02   0.044      .201962    .9776824
pyperstudlep |   1.006217   .0276354     0.23   0.821     .9534848    1.061866
pyperstude~s |   .9810327   .0170993    -1.10   0.272     .9480848    1.015126
pyperstudw~e |   .9201032   .0274781    -2.79   0.005     .8677929    .9755667
pyperstudb~k |   .9432292   .0333007    -1.66   0.098      .880168    1.010809
pyperstudl~o |    .951715    .029631    -1.59   0.112     .8953757    1.011599
pyperstudm~e |   1.007976   .0224767     0.36   0.722     .9648716    1.053007
       Asian |   1.60e-07   .0004822    -0.01   0.996            0           .
       Black |   5.488757   5.070753     1.84   0.065     .8976289    33.56226
      Latino |   1.33e-06   .0019605    -0.01   0.993            0           .
       Other |   5.81e+09   2.85e+14     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   .2166216   .2719515    -1.22   0.223     .0184963    2.536992
  LatinoMale |    1491134   2.19e+09     0.01   0.992            0           .
   OtherMale |   1.80e-09   .0000888    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9722903   .0167143    -1.63   0.102     .9400766    1.005608
       exper |   1.018767   .0192431     0.98   0.325     .9817411     1.05719
        male |    1.11772    .281063     0.44   0.658      .682793    1.829688
         age |   .9941411   .0172062    -0.34   0.734      .960983    1.028443
pyacctrati~2 |   .8321789   .1771406    -0.86   0.388     .5483109    1.263009
pyperstudlep |    1.01309   .0177396     0.74   0.458     .9789108    1.048462
pyperstude~s |   .9955444   .0090365    -0.49   0.623     .9779899    1.013414
pyperstudw~e |   .9821054   .0264806    -0.67   0.503      .931552    1.035402
pyperstudb~k |   .9824506   .0294278    -0.59   0.554     .9264336    1.041855
pyperstudl~o |   .9808188   .0272013    -0.70   0.485     .9289283    1.035608
pyperstudm~e |    1.01293   .0125154     1.04   0.298     .9886951    1.037759
       Asian |   5.98e-07   .0009593    -0.01   0.993            0           .
       Black |    1.57205   1.471522     0.48   0.629     .2510131    9.845462
      Latino |   1.317021   1.688203     0.21   0.830     .1067809    16.24396
       Other |    1.33515   111538.5     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   .8214387   .9038331    -0.18   0.858     .0950591    7.098334
  LatinoMale |   2.225467   3.163274     0.56   0.574      .137254    36.08422
   OtherMale |    5336231   4.46e+11     0.00   1.000            0           .
------------------------------------------------------------------------------


--------->  pyschooltype = E

Iteration 0:   log likelihood = -11660.505
Iteration 1:   log likelihood = -11036.278
Iteration 2:   log likelihood = -11031.159
Iteration 3:   log likelihood = -11031.156
Iteration 4:   log likelihood = -11031.156

Multinomial logistic regression                 Number of obs   =      10695
                                                LR chi2(38)     =    1258.70
                                                Prob > chi2     =     0.0000
Log likelihood = -11031.156                     Pseudo R2       =     0.0540

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.021188   .0042435     5.05   0.000     1.012904    1.029538
       exper |   1.001691   .0052707     0.32   0.748     .9914141    1.012075
        male |   1.589619   .1373548     5.36   0.000     1.341971    1.882969
         age |   .9764466    .003952    -5.89   0.000     .9687316    .9842231
pyacctrati~2 |   .9140584   .0344476    -2.38   0.017     .8489756    .9841305
```

```
pyperstudlep |   1.005952   .0018105     3.30   0.001     1.002409    1.009506
pyperstude~s |   .9921694   .0021336    -3.66   0.000     .9879965      .99636
pyperstudw~e |   .9929213   .0051035    -1.38   0.167     .9829687    1.002975
pyperstudb~k |   .9910668   .0058164    -1.53   0.126     .9797323    1.002533
pyperstudl~o |   .9948203   .0054183    -0.95   0.340     .9842571    1.005497
pyperstudm~e |   1.007698   .0037464     2.06   0.039     1.000382    1.015068
       Asian |   .3666511   .1594175    -2.31   0.021      .156371     .859706
       Black |   .8922106   .0840851    -1.21   0.226     .7417322    1.073217
      Latino |    1.09202   .0823263     1.17   0.243     .9420179    1.265907
       Other |   1.872788   .5048551     2.33   0.020     1.104146    3.176512
   AsianMale |   2.399277   1.857336     1.13   0.258     .5261938    10.93995
   BlackMale |   1.006195   .2069082     0.03   0.976     .6724287    1.505631
  LatinoMale |   .6717891   .0959852    -2.78   0.005     .5077072    .8888992
   OtherMale |   .3442718   .2205404    -1.66   0.096     .0980894    1.208317
-------------+----------------------------------------------------------------
3            |
      tenure |   1.024091    .003661     6.66   0.000      1.01694    1.031291
       exper |   1.064499   .0053196    12.51   0.000     1.054124    1.074976
        male |   2.512479   .1990816    11.63   0.000     2.151075    2.934602
         age |   .9831241   .0040769    -4.10   0.000     .9751659    .9911471
pyacctrati~2 |   .9748371   .0359997    -0.69   0.490      .906772    1.048011
pyperstudlep |   .9972896   .0017793    -1.52   0.128     .9938083    1.000783
pyperstude~s |   1.008137   .0020865     3.92   0.000     1.004056    1.012235
pyperstudw~e |   .9992329   .0052984    -0.14   0.885      .988902    1.009672
pyperstudb~k |   .9865258   .0059299    -2.26   0.024     .9749716    .9982169
pyperstudl~o |   .9902434   .0055559    -1.75   0.081     .9794136    1.001193
pyperstudm~e |   .9963159   .0037891    -0.97   0.332     .9889171     1.00377
       Asian |   .9269231   .3436111    -0.20   0.838     .4482317    1.916835
       Black |   .9080877   .0861428    -1.02   0.309     .7540173     1.09364
      Latino |   1.086861   .0828851     1.09   0.275     .9359666    1.262081
       Other |   1.221749   .3781942     0.65   0.518     .6660266     2.24116
   AsianMale |   1.122364   .7961288     0.16   0.871     .2794791    4.507319
   BlackMale |   .6283962   .1296718    -2.25   0.024     .4193581    .9416336
  LatinoMale |   .5455534   .0758312    -4.36   0.000     .4154525    .7163961
   OtherMale |   .3169513   .2222979    -1.64   0.101     .0801662    1.253124
------------------------------------------------------------------------------


---------->  pyschooltype = M

Iteration 0:   log likelihood = -6376.9921
Iteration 1:   log likelihood = -6094.9607
Iteration 2:   log likelihood = -6089.0878
Iteration 3:   log likelihood = -6089.0713
Iteration 4:   log likelihood = -6089.0713

Multinomial logistic regression                 Number of obs   =       6024
                                                LR chi2(38)     =     575.84
                                                Prob > chi2     =     0.0000
Log likelihood = -6089.0713                     Pseudo R2       =     0.0451

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.006782   .0049529     1.37   0.169     .9971215    1.016537
       exper |    1.00287   .0059716     0.48   0.630     .9912344    1.014643
        male |   1.625421   .1268757     6.22   0.000     1.394837    1.894123
         age |   .9828193   .0046422    -3.67   0.000     .9737628      .99196
pyacctrati~2 |   .9468979   .0529216    -0.98   0.329     .8486527    1.056517
pyperstudlep |   1.004371    .003654     1.20   0.231     .9972342    1.011558
pyperstude~s |   .9993062   .0027957    -0.25   0.804     .9938416    1.004801
pyperstudw~e |   .9917419   .0069072    -1.19   0.234      .978296    1.005373
pyperstudb~k |   .9924081   .0079041    -0.96   0.339     .9770366    1.008021
pyperstudl~o |   .9905105     .00748    -1.26   0.207      .975958     1.00528
```

```
pyperstudm~e |   1.004382    .004573     0.96   0.337     .9954594    1.013385
       Asian |   1.087993   .5012643     0.18   0.855     .4410191    2.684077
       Black |   1.022704   .1119215     0.21   0.837     .8252722    1.267368
      Latino |   2.115884   .2454629     6.46   0.000      1.68556    2.656069
       Other |   .7619881   .2798628    -0.74   0.459     .3709532    1.565227
   AsianMale |   1.537671   1.132145     0.58   0.559     .3632011    6.509982
   BlackMale |   1.321104   .2227547     1.65   0.099     .9493225    1.838486
  LatinoMale |   .7197479   .1131831    -2.09   0.037     .5288417    .9795692
   OtherMale |   1.861091   .9654351     1.20   0.231     .6733016    5.144293
-------------+----------------------------------------------------------------
3            |
      tenure |   1.009807   .0051783     1.90   0.057      .999709    1.020008
       exper |   1.074196   .0079305     9.69   0.000     1.058764    1.089852
        male |   2.042543   .1781202     8.19   0.000     1.721639    2.423262
         age |   .9604386   .0062089    -6.24   0.000     .9483463    .9726852
pyacctrati~2 |   .9557217   .0623019    -0.69   0.487      .841091    1.085975
pyperstudlep |   .9893798   .0048016    -2.20   0.028     .9800134    .9988356
pyperstude~s |   1.012962   .0033173     3.93   0.000     1.006481    1.019484
pyperstudw~e |    1.01917   .0096444     2.01   0.045     1.000441    1.038249
pyperstudb~k |   1.003705   .0107608     0.34   0.730     .9828341    1.025019
pyperstudl~o |   1.005091   .0101914     0.50   0.617     .9853133    1.025266
pyperstudm~e |   .9936266   .0060376    -1.05   0.293     .9818634    1.005531
       Asian |   1.066603   .6291961     0.11   0.913       .33564    3.389473
       Black |   .7824088   .1160518    -1.65   0.098       .58503     1.04638
      Latino |   1.534357   .2263341     2.90   0.004     1.149119    2.048745
       Other |   .5743872   .3147192    -1.01   0.312     .1962515    1.681112
   AsianMale |   .8119992   .8387913    -0.20   0.840     .1072182    6.149542
   BlackMale |    1.44621   .3073496     1.74   0.083     .9535282    2.193458
  LatinoMale |   .8684611   .1646538    -0.74   0.457     .5989201    1.259308
   OtherMale |   1.116853   .8298719     0.15   0.882     .2603243    4.791561
------------------------------------------------------------------------------


---------->  pyschooltype = S

Iteration 0:   log likelihood = -7102.6298
Iteration 1:   log likelihood = -6811.1161
Iteration 2:   log likelihood = -6801.6771
Iteration 3:   log likelihood = -6801.6243
Iteration 4:   log likelihood = -6801.6243

Multinomial logistic regression                 Number of obs   =       7357
                                                LR chi2(38)     =     602.01
                                                Prob > chi2     =     0.0000
Log likelihood = -6801.6243                     Pseudo R2       =     0.0424

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.007316     .00384     1.91   0.056     .9998174     1.01487
       exper |   1.006235   .0049419     1.27   0.206     .9965954    1.015967
        male |   1.071161   .0701948     1.05   0.294     .9420507    1.217966
         age |   .9707023   .0041296    -6.99   0.000     .9626422      .97883
pyacctrati~2 |   .8450653   .0594583    -2.39   0.017     .7362075    .9700192
pyperstudlep |   1.019583   .0046136     4.29   0.000     1.010581    1.028666
pyperstude~s |   .9904462   .0022504    -4.22   0.000     .9860452    .9948668
pyperstudw~e |   .9955815   .0059967    -0.74   0.462     .9838972    1.007405
pyperstudb~k |   .9982195   .0067117    -0.27   0.791      .985151    1.011461
pyperstudl~o |   .9969155   .0064087    -0.48   0.631     .9844335    1.009556
pyperstudm~e |   1.003775    .003641     1.04   0.299     .9966646    1.010937
       Asian |   .9616895   .4106491    -0.09   0.927      .416452    2.220776
       Black |   1.241164   .1372412     1.95   0.051     .9993273    1.541524
      Latino |   1.874988   .2030676     5.80   0.000     1.516389     2.31839
       Other |    .707406   .2808308    -0.87   0.383     .3249025    1.540226
```

```
   AsianMale |   1.082084   .7898479     0.11   0.914     .2587865    4.524601
   BlackMale |   1.790034   .2747321     3.79   0.000     1.325012    2.418258
  LatinoMale |   1.205959   .1660128     1.36   0.174     .9207799    1.579463
   OtherMale |   1.069214   .5909035     0.12   0.904      .361948    3.158516
-------------+----------------------------------------------------------------
3            |
      tenure |   .9964662   .0047888    -0.74   0.461     .9871244    1.005896
       exper |   1.064205   .0079279     8.35   0.000     1.048779    1.079857
        male |   1.950851   .1835135     7.10   0.000     1.622381    2.345823
         age |   .9585832   .0067131    -6.04   0.000     .9455156    .9718314
pyacctrati~2 |   .9822674   .0948554    -0.19   0.853     .8128886    1.186939
pyperstudlep |   1.004047   .0071133     0.57   0.569      .990202    1.018086
pyperstude~s |   1.013301   .0031404     4.26   0.000     1.007165    1.019475
pyperstudw~e |   1.034128   .0113331     3.06   0.002     1.012152    1.056581
pyperstudb~k |   1.021361   .0122658     1.76   0.078     .9976008    1.045686
pyperstudl~o |   1.018934   .0117262     1.63   0.103     .9962085    1.042178
pyperstudm~e |   .9892221    .006044    -1.77   0.076     .9774467    1.001139
       Asian |   .4842548   .5032342    -0.70   0.485       .06317    3.712245
       Black |   .8769656   .1856877    -0.62   0.535     .5790953    1.328052
      Latino |    1.37248   .2515146     1.73   0.084     .9583379    1.965593
       Other |   .6490818   .4828065    -0.58   0.561     .1510602    2.789001
   AsianMale |   1.321632   1.981764     0.19   0.852     .0699438    24.97308
   BlackMale |   1.591591    .416126     1.78   0.075     .9534161    2.656933
  LatinoMale |   .8997348   .1949306    -0.49   0.626     .5884355     1.37572
   OtherMale |   2.889944   2.413682     1.27   0.204     .5622968    14.85296
------------------------------------------------------------------------------
```

2008-09

```
. mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian Black Latino Other
AsianMale Black
> Male LatinoMale OtherMale if validcert2009a==1, rrr iter(20)

Iteration 0:   log likelihood = -27369.807
Iteration 1:   log likelihood = -26169.392
Iteration 2:   log likelihood = -26143.614
Iteration 3:   log likelihood = -26143.563
Iteration 4:   log likelihood = -26143.563

Multinomial logistic regression                 Number of obs   =      25757
                                                LR chi2(38)     =    2452.49
                                                Prob > chi2     =     0.0000
Log likelihood = -26143.563                     Pseudo R2       =     0.0448

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.01186    .002402     4.97   0.000     1.007163    1.016579
       exper |   1.005672    .002945     1.93   0.053     .9999165    1.011461
        male |   1.139728   .0454875     3.28   0.001     1.053972    1.232461
         age |   .9804976    .002302    -8.39   0.000     .9759962    .9850197
pyacctrati~2 |   .9378764    .021675    -2.78   0.006     .8963419    .9813355
pyperstudlep |   1.005848   .0011968     4.90   0.000     1.003505    1.008196
pyperstude~s |   .9939578   .0012214    -4.93   0.000     .9915667    .9963546
pyperstudw~e |   .9907206   .0031885    -2.90   0.004     .9844909    .9969898
pyperstudb~k |   .9919398   .0036362    -2.21   0.027     .9848386    .9990923
pyperstudl~o |   .9931545   .0034126    -2.00   0.046     .9864885    .9998655
pyperstudm~e |   1.005197    .002108     2.47   0.013     1.001074    1.009337
       Asian |   .7919656   .1861775    -0.99   0.321     .4995781    1.255478
       Black |   1.098466   .0623944     1.65   0.098     .9827366    1.227824
      Latino |   1.358615   .0703716     5.92   0.000     1.227459    1.503785
       Other |   1.121046   .1953838     0.66   0.512     .7966544    1.577527
   AsianMale |   1.696182   .6778512     1.32   0.186      .775004    3.712283
```

```
   BlackMale |    1.79775   .1674185     6.30   0.000      1.49782    2.157739
  LatinoMale |   1.206363   .0926407     2.44   0.015     1.037795    1.402313
   OtherMale |   .9289549   .2769844    -0.25   0.805     .5178378    1.666462
-------------+------------------------------------------------------------------
3            |
      tenure |   1.014585   .0023652     6.21   0.000      1.00996    1.019231
       exper |   1.059573   .0035037    17.50   0.000     1.052728    1.066463
        male |   1.440425   .0612336     8.58   0.000     1.325274    1.565583
         age |   .9785644   .0027937    -7.59   0.000     .9731042    .9840554
pyacctrati~2 |   1.450373   .0358803    15.03   0.000     1.381727     1.52243
pyperstudlep |   1.007841   .0013024     6.04   0.000     1.005292    1.010397
pyperstude~s |   1.019027   .0013715    14.00   0.000     1.016342    1.021718
pyperstudw~e |   1.001998   .0037318     0.54   0.592     .9947108    1.009339
pyperstudb~k |   .9874572   .0042059    -2.96   0.003     .9792481    .9957351
pyperstudl~o |   .9853013   .0039136    -3.73   0.000     .9776605    .9930017
pyperstudm~e |   .9958779   .0025834    -1.59   0.111     .9908274    1.000954
       Asian |   .7951408   .2246188    -0.81   0.417     .4570763    1.383246
       Black |   .8037678   .0557227    -3.15   0.002     .7016483    .9207501
      Latino |   1.120749   .0660843     1.93   0.053     .9984302    1.258053
       Other |    .863921   .1893091    -0.67   0.504     .5622793    1.327382
   AsianMale |   1.374759   .6701479     0.65   0.514     .5288041     3.57403
   BlackMale |   1.507444   .1733271     3.57   0.000     1.203287    1.888482
  LatinoMale |   1.029492   .0901036     0.33   0.740     .8672093    1.222144
   OtherMale |   1.346672   .4556914     0.88   0.379     .6937922    2.613932
------------------------------------------------------------------------------

. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=25757)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     46.368    2    0.000
       exper |    341.526    2    0.000
        male |     73.600    2    0.000
         age |     99.922    2    0.000
pyacctrati~2 |    304.341    2    0.000
pyperstudlep |     44.200    2    0.000
pyperstude~s |    310.724    2    0.000
pyperstudw~e |     11.315    2    0.003
pyperstudb~k |     10.230    2    0.006
pyperstudl~o |     14.194    2    0.001
pyperstudm~e |     12.893    2    0.002
       Asian |      1.301    2    0.522
       Black |     18.023    2    0.000
      Latino |     34.967    2    0.000
       Other |      1.281    2    0.527
   AsianMale |      1.801    2    0.406
   BlackMale |     41.722    2    0.000
  LatinoMale |      6.477    2    0.039
   OtherMale |      1.111    2    0.574
-----------------------------------------

**** Wald tests for independent variables (N=25757)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     46.318    2    0.000
       exper |    320.899    2    0.000
        male |     73.777    2    0.000
         age |     98.845    2    0.000
pyacctrati~2 |    304.078    2    0.000
pyperstudlep |     43.920    2    0.000
```

```
pyperstude~s |    304.743    2    0.000
pyperstudw~e |     11.473    2    0.003
pyperstudb~k |     10.216    2    0.006
pyperstudl~o |     14.325    2    0.001
pyperstudm~e |     12.838    2    0.002
       Asian |      1.295    2    0.523
       Black |     17.746    2    0.000
      Latino |     35.073    2    0.000
       Other |      1.267    2    0.531
   AsianMale |      1.790    2    0.409
   BlackMale |     41.134    2    0.000
  LatinoMale |      6.482    2    0.039
   OtherMale |      1.115    2    0.573
-----------------------------------------

**** Hausman tests of IIA assumption (N=25757)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+-----------------------------------
       2 |   -64.693   19     ---    ---
       3 |     1.053   19    1.000   for Ho
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=25757)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+-----------------------------------------------------
       2 |  -5381.727  -5373.230  16.995   20    0.653   for Ho
       3 |  -6581.114  -6567.772  26.684   20    0.144   for Ho
-----------------------------------------------------------------

**** Wald tests for combining alternatives (N=25757)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+-----------------------
       2-       3  | 1555.306   19    0.000
       2-       1  |  406.548   19    0.000
       3-       1  | 1554.862   19    0.000
-----------------------------------------

**** LR tests for combining alternatives (N=25757)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+-----------------------
       2-       3  | 1723.906   19    0.000
       2-       1  |  415.611   19    0.000
       3-       1  | 1724.149   19    0.000
-----------------------------------------

by region:


. bysort region: mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian
Black Latino Other
```

```
> AsianMale BlackMale LatinoMale OtherMale if validcert2009a==1, rrr iter(20)


---------->  region = 1

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -1947.2799
Iteration 1:   log likelihood = -1848.8205
Iteration 2:   log likelihood = -1845.7607
Iteration 3:   log likelihood = -1845.5012
Iteration 4:   log likelihood = -1845.4601
Iteration 5:   log likelihood = -1845.4504
Iteration 6:   log likelihood = -1845.4482
Iteration 7:   log likelihood = -1845.4477
Iteration 8:   log likelihood = -1845.4476
Iteration 9:   log likelihood = -1845.4476

Multinomial logistic regression                 Number of obs   =       1811
                                                LR chi2(34)     =     203.66
                                                Prob > chi2     =     0.0000
Log likelihood = -1845.4476                     Pseudo R2       =     0.0523

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |     1.0171   .0089035     1.94   0.053     .9997978    1.034701
       exper |    .999036    .012078    -0.08   0.936     .9756418    1.022991
        male |   1.007228   .3333636     0.02   0.983     .5265076    1.926865
         age |   .9685093   .0097745    -3.17   0.002       .94954    .9878577
pyacctrati~2 |   .7664091   .0739198    -2.76   0.006     .6343993    .9258883
pyperstudlep |   1.006338     .00299     2.13   0.033     1.000495    1.012215
pyperstude~s |   .9963562   .0056489    -0.64   0.520     .9853459     1.00749
pyperstudw~e |   1.082802   .0853058     1.01   0.313     .9278744    1.263597
pyperstudb~k |   .9861149   .1211976    -0.11   0.909     .7750172    1.254711
pyperstudl~o |   1.078462   .0748301     1.09   0.276     .9413333    1.235567
pyperstudm~e |   .9914071   .0074794    -1.14   0.253     .9768555    1.006175
       Asian |    .474521   .4261688    -0.83   0.407     .0816185    2.758812
       Black |   .6831313   .8559644    -0.30   0.761     .0586067    7.962708
      Latino |   1.047838   .2295296     0.21   0.831      .682084     1.60972
       Other |   1.474829    1.25925     0.46   0.649     .2766696    7.861792
   AsianMale |  (omitted)
   BlackMale |   1.776886   2.708446     0.38   0.706     .0895783    35.24654
  LatinoMale |   1.287768   .4548037     0.72   0.474     .6444909    2.573109
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.029515   .0095333     3.14   0.002     1.010999    1.048371
       exper |   1.083956   .0173411     5.04   0.000     1.050496    1.118483
        male |   1.077251   .3876442     0.21   0.836     .5321278    2.180812
         age |   .9397499   .0134291    -4.35   0.000     .9137945    .9664426
pyacctrati~2 |   1.254778   .1339305     2.13   0.033     1.017917    1.546753
pyperstudlep |   1.014948   .0034912     4.31   0.000     1.008129    1.021814
pyperstude~s |   .9918654   .0065209    -1.24   0.214     .9791667    1.004729
pyperstudw~e |   1.034149   .0877928     0.40   0.692     .8756316    1.221363
pyperstudb~k |   1.054971   .1200363     0.47   0.638     .8440916    1.318535
pyperstudl~o |   1.046403   .0743739     0.64   0.523     .9103306    1.202815
pyperstudm~e |   .9902689   .0090452    -1.07   0.284     .9726985    1.008157
       Asian |   2.71e-07   .0003173    -0.01   0.990            0           .
       Black |   1.287725   1.606655     0.20   0.839     .1116363    14.85392
      Latino |   .7664822   .1775541    -1.15   0.251      .486769    1.206928
       Other |    .463116    .554557    -0.64   0.520     .0443018    4.841263
   AsianMale |  (omitted)
   BlackMale |   6.57e-07   .0007265    -0.01   0.990            0           .
```

```
  LatinoMale |    1.17403    .457792     0.41   0.681     .5467243      2.5211
   OtherMale |  (omitted)
-------------------------------------------------------------------------------


---------->  region = 2

Iteration 0:   log likelihood = -767.67186
Iteration 1:   log likelihood = -735.67274
Iteration 2:   log likelihood = -734.61923
Iteration 3:   log likelihood =  -734.4441
Iteration 4:   log likelihood = -734.41673
Iteration 5:   log likelihood = -734.41022
Iteration 6:   log likelihood =  -734.4088
Iteration 7:   log likelihood = -734.40847
Iteration 8:   log likelihood = -734.40842

Multinomial logistic regression                 Number of obs   =        742
                                                LR chi2(38)     =      66.53
                                                Prob > chi2     =     0.0029
Log likelihood = -734.40842                     Pseudo R2       =     0.0433

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.020114   .0161935     1.25   0.210     .9888637    1.052351
       exper |   .9731372   .0181473    -1.46   0.144     .9382113    1.009363
        male |    1.07715   .3039823     0.26   0.792     .6195245    1.872809
         age |   .9938152   .0135642    -0.45   0.649     .9675822    1.020759
pyacctrati~2 |   1.049593   .1819744     0.28   0.780     .7472107    1.474345
pyperstudlep |    .994572   .0215919    -0.25   0.802     .9531404    1.037805
pyperstude~s |   1.007681   .0081131     0.95   0.342     .9919046    1.023709
pyperstudw~e |   .9676441   .0741051    -0.43   0.668     .8327758    1.124354
pyperstudb~k |   .9996383   .0852427    -0.00   0.997      .845781    1.181484
pyperstudl~o |   .9638508   .0716776    -0.50   0.621     .8331237    1.115091
pyperstudm~e |   .9785278   .0147647    -1.44   0.150     .9500132    1.007898
       Asian |   2.234306    3.25082     0.55   0.581     .1290271    38.69052
       Black |   1.332124   1.022193     0.37   0.709     .2960626    5.993851
      Latino |   1.029821   .2673302     0.11   0.910     .6191547    1.712869
       Other |   2.337162   2.399984     0.83   0.408     .3123252    17.48922
   AsianMale |   2.15e-06   .0017625    -0.02   0.987            0           .
   BlackMale |   .5156919   .7246013    -0.47   0.637      .032837    8.098747
  LatinoMale |   1.812275    .715187     1.51   0.132     .8362005    3.927697
   OtherMale |   4.76e-07   .0003587    -0.02   0.985            0           .
-------------+-----------------------------------------------------------------
3            |
      tenure |   1.015225   .0144042     1.06   0.287     .9873823    1.043853
       exper |   1.017627   .0185979     0.96   0.339     .9818205    1.054738
        male |   .8109506   .2446432    -0.69   0.487     .4489609    1.464806
         age |   .9919495   .0145192    -0.55   0.581     .9638966    1.020819
pyacctrati~2 |   1.398495   .2342902     2.00   0.045     1.007068    1.942061
pyperstudlep |   1.016728   .0191294     0.88   0.378     .9799178    1.054921
pyperstude~s |   1.018084   .0084647     2.16   0.031     1.001628    1.034811
pyperstudw~e |   1.063525   .0868197     0.75   0.451      .906277    1.248058
pyperstudb~k |   1.021218   .1004434     0.21   0.831     .8421656     1.23834
pyperstudl~o |   1.049696   .0833643     0.61   0.541     .8983861    1.226489
pyperstudm~e |   .9604522   .0164858    -2.35   0.019     .9286781    .9933136
       Asian |   5.10e-06   .0041552    -0.01   0.988            0           .
       Black |    2.13763   1.552665     1.05   0.296     .5148295    8.875682
      Latino |   1.158794   .2915523     0.59   0.558     .7076915    1.897441
       Other |   .9747074   1.232364    -0.02   0.984     .0817831    11.61675
   AsianMale |   745718.8   6.08e+08     0.02   0.987            0           .
   BlackMale |   .7039371   .9780861    -0.25   0.801     .0462201    10.72103
  LatinoMale |   1.941934   .7870394     1.64   0.102     .8775137     4.29749
```

```
   OtherMale |   2.90e-06   .0020345    -0.02   0.985           0           .
-------------------------------------------------------------------------------


---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -342.48577
Iteration 1:   log likelihood = -298.95785
Iteration 2:   log likelihood = -298.10366
Iteration 3:   log likelihood = -298.09389
Iteration 4:   log likelihood = -298.09149
Iteration 5:   log likelihood = -298.09103
Iteration 6:   log likelihood = -298.09095
Iteration 7:   log likelihood = -298.09093

Multinomial logistic regression                 Number of obs   =        319
                                                LR chi2(32)     =      88.79
                                                Prob > chi2     =     0.0000
Log likelihood = -298.09093                     Pseudo R2       =     0.1296

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.056373   .0273657     2.12   0.034     1.004076    1.111394
       exper |   .9136186   .0250713    -3.29   0.001     .8657777     .964103
        male |   2.210184   .8357953     2.10   0.036     1.053273     4.63784
         age |   1.012486   .0220269     0.57   0.568     .9702218    1.056592
pyacctrati~2 |   .9009452   .2363898    -0.40   0.691     .5387166    1.506733
pyperstudlep |   .9813227   .0362097    -0.51   0.609     .9128585    1.054922
pyperstude~s |    1.01673   .0203768     0.83   0.408     .9775664    1.057463
pyperstudw~e |   .9878086   .0576933    -0.21   0.834     .8809637    1.107612
pyperstudb~k |   .9968408   .0582058    -0.05   0.957     .8890453    1.117706
pyperstudl~o |   .9974441   .0601283    -0.04   0.966     .8862906    1.122538
pyperstudm~e |   1.023767   .0291251     0.83   0.409     .9682454    1.082473
       Asian |  (omitted)
       Black |   1.656457   1.233266     0.68   0.498     .3849847    7.127168
      Latino |   1.543736   .9832727     0.68   0.495     .4430023    5.379481
       Other |    1044902   7.78e+08     0.02   0.985           0           .
   AsianMale |  (omitted)
   BlackMale |   2.480506   3.593218     0.63   0.531     .1450455    42.42054
  LatinoMale |   .9769341   .9079711    -0.03   0.980     .1580342      6.0392
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.046613   .0211223     2.26   0.024     1.006023    1.088842
       exper |   .9792938   .0237046    -0.86   0.387     .9339185    1.026874
        male |   2.946358   1.065997     2.99   0.003     1.449838    5.987582
         age |    1.03638   .0226927     1.63   0.103     .9928444    1.081826
pyacctrati~2 |   1.222498   .2808583     0.87   0.382     .7792769    1.917804
pyperstudlep |    1.03657   .0306082     1.22   0.224      .978282    1.098331
pyperstude~s |   1.068625   .0206375     3.44   0.001     1.028932    1.109849
pyperstudw~e |   1.015237   .0591387     0.26   0.795      .905699    1.138022
pyperstudb~k |   .9842824   .0571876    -0.27   0.785     .8783432    1.102999
pyperstudl~o |   .9636391   .0580613    -0.61   0.539     .8563035    1.084429
pyperstudm~e |   1.050033   .0292723     1.75   0.080     .9941998    1.109002
       Asian |  (omitted)
       Black |   .9876789   .7247926    -0.02   0.987     .2344094    4.161564
      Latino |   1.616076   1.001775     0.77   0.439     .4795325    5.446349
       Other |   1.462791   1649.419     0.00   1.000           0           .
   AsianMale |  (omitted)
   BlackMale |   4.528126    6.36928     1.07   0.283     .2874848    71.32175
```

```
  LatinoMale |   .4203664   .4275301    -0.85   0.394     .0572691    3.085569
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 4

Iteration 0:   log likelihood = -5701.9176
Iteration 1:   log likelihood =  -5352.972
Iteration 2:   log likelihood = -5335.4921
Iteration 3:   log likelihood = -5335.4055
Iteration 4:   log likelihood = -5335.4055

Multinomial logistic regression                 Number of obs   =       5557
                                                LR chi2(38)     =     733.02
                                                Prob > chi2     =     0.0000
Log likelihood = -5335.4055                     Pseudo R2       =     0.0643

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.027789   .0053562     5.26   0.000     1.017345    1.038341
       exper |   1.026159   .0068517     3.87   0.000     1.012817    1.039676
        male |    1.09064   .0978187     0.97   0.333     .9148241    1.300244
         age |    .968269   .0050816    -6.14   0.000     .9583604    .9782801
pyacctrati~2 |   .9092645   .0448393    -1.93   0.054     .8254946    1.001535
pyperstudlep |   1.000171   .0027844     0.06   0.951     .9947283    1.005643
pyperstude~s |   .9969186   .0033281    -0.92   0.355     .9904169    1.003463
pyperstudw~e |   .9963032   .0051615    -0.71   0.475      .986238    1.006471
pyperstudb~k |   .9961012   .0063446    -0.61   0.540     .9837433    1.008614
pyperstudl~o |   .9972659   .0060392    -0.45   0.651     .9854992    1.009173
pyperstudm~e |   1.007774   .0047727     1.64   0.102      .998463    1.017172
       Asian |   .3647357   .1550847    -2.37   0.018     .1585074    .8392802
       Black |   .8443748   .0830786    -1.72   0.086     .6962817    1.023966
      Latino |   1.497971   .1774847     3.41   0.001     1.187545    1.889542
       Other |   .9370659   .3403402    -0.18   0.858     .4598494    1.909522
   AsianMale |   2.085678   1.561942     0.98   0.326     .4806085    9.051134
   BlackMale |   1.924878   .3080801     4.09   0.000     1.406588    2.634144
  LatinoMale |   1.044232   .2051999     0.22   0.826     .7104426    1.534846
   OtherMale |   2.116392   1.386899     1.14   0.253     .5858586    7.645387
-------------+----------------------------------------------------------------
3            |
      tenure |   1.038575   .0060871     6.46   0.000     1.026713    1.050574
       exper |   1.087138   .0095699     9.49   0.000     1.068542    1.106057
        male |   1.306357    .145621     2.40   0.017     1.049972    1.625347
         age |   .9619424   .0071886    -5.19   0.000     .9479556    .9761355
pyacctrati~2 |   1.351369   .0804147     5.06   0.000     1.202603    1.518538
pyperstudlep |   1.012933   .0034531     3.77   0.000     1.006187    1.019723
pyperstude~s |   1.027173   .0043777     6.29   0.000     1.018629    1.035789
pyperstudw~e |   .9943032    .006225    -0.91   0.361     .9821769    1.006579
pyperstudb~k |   .9790516   .0078018    -2.66   0.008     .9638792    .9944629
pyperstudl~o |   .9657116   .0071441    -4.72   0.000     .9518105    .9798158
pyperstudm~e |   1.000753   .0065697     0.11   0.909     .9879593    1.013713
       Asian |   .4699268   .2313991    -1.53   0.125     .1790134    1.233601
       Black |   .5488707   .0721934    -4.56   0.000     .4241416    .7102794
      Latino |   1.181348   .1744181     1.13   0.259     .8845122    1.577801
       Other |    .659584    .368799    -0.74   0.457     .2204603    1.973376
   AsianMale |   3.075719   2.626026     1.32   0.188     .5770282    16.39443
   BlackMale |   1.654317   .3628854     2.29   0.022     1.076222    2.542936
  LatinoMale |   1.127056    .280687     0.48   0.631     .6917646    1.836253
   OtherMale |   4.351827   3.785456     1.69   0.091      .791134    23.93829
------------------------------------------------------------------------------
```

```
---------->  region = 5

Iteration 0:   log likelihood = -534.18779
Iteration 1:   log likelihood = -483.26692
Iteration 2:   log likelihood = -481.73627
Iteration 3:   log likelihood = -481.56596
Iteration 4:   log likelihood = -481.53021
Iteration 5:   log likelihood = -481.52185
Iteration 6:   log likelihood = -481.52003
Iteration 7:   log likelihood =  -481.5198
Iteration 8:   log likelihood = -481.51977

Multinomial logistic regression                 Number of obs   =        509
                                                LR chi2(38)     =     105.34
                                                Prob > chi2     =     0.0000
Log likelihood = -481.51977                     Pseudo R2       =     0.0986

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.022651    .018409     1.24   0.213     .9871987    1.059376
       exper |   .9522642   .0219826    -2.12   0.034     .9101393    .9963387
        male |   1.552838    .440622     1.55   0.121     .8904213    2.708052
         age |   1.001627   .0185715     0.09   0.930     .9658809    1.038696
pyacctrati~2 |   .7368865    .136298    -1.65   0.099     .5128122     1.05887
pyperstudlep |   .9836079   .0367229    -0.44   0.658     .9142026    1.058282
pyperstude~s |   1.003958   .0113256     0.35   0.726     .9820036    1.026403
pyperstudw~e |   1.047445   .0594695     0.82   0.414     .9371376    1.170735
pyperstudb~k |   1.034407   .0611448     0.57   0.567     .9212467    1.161466
pyperstudl~o |   1.068098   .0787402     0.89   0.372     .9244012    1.234132
pyperstudm~e |   .9863577   .0276916    -0.49   0.625     .9335493    1.042153
       Asian |    9800195   1.79e+10     0.01   0.993            0           .
       Black |   1.766912   .7347217     1.37   0.171      .782107    3.991753
      Latino |   .3084792   .3505878    -1.03   0.301     .0332531    2.861671
       Other |    2038523   1.22e+09     0.02   0.981            0           .
   AsianMale |   .2817973   729.3034    -0.00   1.000            0           .
   BlackMale |   2.319537   1.318445     1.48   0.139     .7613266    7.066942
  LatinoMale |   7.15e-06   .0057073    -0.01   0.988            0           .
   OtherMale |   2.952852   5685.257     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.021947   .0163226     1.36   0.174     .9904506    1.054445
       exper |   1.048766   .0269963     1.85   0.064     .9971665    1.103035
        male |   2.551193   .7289061     3.28   0.001     1.457287    4.466237
         age |   .9588316   .0218367    -1.85   0.065     .9169736      1.0026
pyacctrati~2 |   1.627983   .2842514     2.79   0.005     1.156184    2.292306
pyperstudlep |   .9744193   .0371082    -0.68   0.496     .9043366    1.049933
pyperstude~s |   1.014348   .0111835     1.29   0.196     .9926635    1.036505
pyperstudw~e |   1.041243   .0513658     0.82   0.413     .9452819    1.146946
pyperstudb~k |   1.016214   .0525753     0.31   0.756     .9182207    1.124665
pyperstudl~o |   1.065336   .0679247     0.99   0.321     .9401883    1.207142
pyperstudm~e |   1.010106   .0226846     0.45   0.654     .9666088     1.05556
       Asian |    4.48709   13983.64     0.00   1.000            0           .
       Black |   2.346049   1.029487     1.94   0.052     .9926931    5.544459
      Latino |   .5233638   .6122814    -0.55   0.580     .0528429    5.183477
       Other |    1157989   6.93e+08     0.02   0.981            0           .
   AsianMale |   .1996862   880.0726    -0.00   1.000            0           .
   BlackMale |   1.208091   .7275019     0.31   0.754     .3711189    3.932655
  LatinoMale |   1.366624   2.635316     0.16   0.871     .0312064    59.84875
   OtherMale |   3.14e-07   .0009952    -0.00   0.996            0           .
------------------------------------------------------------------------------


---------->  region = 6
```

```
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1014.5947
Iteration 1:   log likelihood = -953.06724
Iteration 2:   log likelihood = -951.25508
Iteration 3:   log likelihood = -951.10848
Iteration 4:   log likelihood = -951.08313
Iteration 5:   log likelihood = -951.07751
Iteration 6:   log likelihood = -951.07614
Iteration 7:   log likelihood = -951.07585
Iteration 8:   log likelihood = -951.07579
Iteration 9:   log likelihood = -951.07578

Multinomial logistic regression                 Number of obs   =        969
                                                LR chi2(36)     =     127.04
                                                Prob > chi2     =     0.0000
Log likelihood = -951.07578                     Pseudo R2       =     0.0626

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.023832   .0132401     1.82   0.069     .9982076    1.050113
       exper |   1.010709   .0154867     0.70   0.487     .9808069    1.041523
        male |   1.304837    .237062     1.46   0.143      .913925    1.862954
         age |   .9844496   .0123685    -1.25   0.212     .9605039    1.008992
pyacctrati~2 |    1.09001   .1365695     0.69   0.492     .8526713    1.393411
pyperstudlep |   1.006912   .0137393     0.50   0.614     .9803407    1.034204
pyperstude~s |   .9927003   .0064673    -1.12   0.261     .9801052    1.005457
pyperstudw~e |   1.032623   .0300284     1.10   0.270      .975414    1.093187
pyperstudb~k |   1.028134   .0321671     0.89   0.375     .9669817    1.093153
pyperstudl~o |   1.043727   .0310338     1.44   0.150     .9846401    1.106359
pyperstudm~e |   .9882669   .0117061    -1.00   0.319     .9655876    1.011479
       Asian |   1.428387   2.047772     0.25   0.804     .0860086    23.72193
       Black |   1.933973   .7344331     1.74   0.082     .9187632    4.070963
      Latino |   .3189079    .182465    -2.00   0.046     .1039071    .9787802
       Other |   .6686175   .7912469    -0.34   0.734     .0657445    6.799796
   AsianMale |  (omitted)
   BlackMale |   2.593153    1.87774     1.32   0.188      .627279    10.72002
  LatinoMale |   3.496941   2.688931     1.63   0.104     .7747596    15.78373
   OtherMale |    9285557   2.00e+10     0.01   0.994            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.016867   .0132052     1.29   0.198     .9913116     1.04308
       exper |   1.059413    .018166     3.37   0.001       1.0244    1.095622
        male |   2.210281   .4352782     4.03   0.000      1.50251    3.251453
         age |   .9867006   .0146214    -0.90   0.366     .9584553    1.015778
pyacctrati~2 |   1.693223    .238385     3.74   0.000     1.284918    2.231274
pyperstudlep |   1.013024   .0151089     0.87   0.386     .9838395    1.043074
pyperstude~s |   1.019065   .0070347     2.74   0.006      1.00537    1.032946
pyperstudw~e |   1.045607   .0332283     1.40   0.161      .982468    1.112805
pyperstudb~k |   1.045198   .0350517     1.32   0.187     .9787066    1.116206
pyperstudl~o |   1.036618   .0335523     1.11   0.267     .9728996    1.104511
pyperstudm~e |   .9872181   .0111686    -1.14   0.255     .9655689    1.009353
       Asian |   1.70e-06   .0019521    -0.01   0.991            0           .
       Black |   .8891915   .4429782    -0.24   0.814     .3349214    2.360737
      Latino |   .3353441   .2207649    -1.66   0.097     .0922837    1.218587
       Other |   7.50e-07   .0006589    -0.02   0.987            0           .
   AsianMale |  (omitted)
   BlackMale |   2.615654   2.222389     1.13   0.258     .4947179    13.82939
  LatinoMale |   1.452824   1.383177     0.39   0.695     .2248108    9.388775
   OtherMale |   382410.6   1.49e+09     0.00   0.997            0           .
------------------------------------------------------------------------------
```

```
---------->  region = 7

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1143.0591
Iteration 1:   log likelihood = -1072.2633
Iteration 2:   log likelihood =  -1070.877
Iteration 3:   log likelihood = -1070.5385
Iteration 4:   log likelihood = -1070.5021
Iteration 5:   log likelihood = -1070.4996
Iteration 6:   log likelihood = -1070.4991
Iteration 7:   log likelihood =  -1070.499
Iteration 8:   log likelihood =  -1070.499

Multinomial logistic regression                 Number of obs   =       1100
                                                LR chi2(34)     =     145.12
                                                Prob > chi2     =     0.0000
Log likelihood =  -1070.499                     Pseudo R2       =     0.0635

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9958404   .0119128    -0.35   0.728     .9727632    1.019465
       exper |   .9934083    .014257    -0.46   0.645     .9658545    1.021748
        male |   1.991685    .370776     3.70   0.000     1.382799    2.868679
         age |   .9810959   .0118976    -1.57   0.116     .9580519    1.004694
pyacctrati~2 |   .9916354   .1518821    -0.05   0.956     .7344787    1.338828
pyperstudlep |   1.008026   .0132233     0.61   0.542     .9824394    1.034279
pyperstude~s |   1.001241   .0087281     0.14   0.887     .9842792    1.018495
pyperstudw~e |   .9003381   .0614581    -1.54   0.124     .7875926    1.029223
pyperstudb~k |   .9070562   .0634707    -1.39   0.163     .7908095    1.040391
pyperstudl~o |    .904634   .0639569    -1.42   0.156     .7875781    1.039088
pyperstudm~e |   .9929838   .0161719    -0.43   0.666     .9617881    1.025191
       Asian |  (omitted)
       Black |   1.910513   .6091584     2.03   0.042       1.0227    3.569042
      Latino |   1.107543   .7971661     0.14   0.887     .2702086    4.539647
       Other |    1943743   9.75e+08     0.03   0.977            0           .
   AsianMale |  (omitted)
   BlackMale |   1.148244   .5806784     0.27   0.785     .4261605    3.093822
  LatinoMale |   3.859596   4.211253     1.24   0.216     .4547632    32.75656
   OtherMale |   8.53e-07   .0004277    -0.03   0.978            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9830519   .0100774    -1.67   0.095     .9634977    1.003003
       exper |   1.030847   .0138487     2.26   0.024     1.004059    1.058351
        male |   2.262137   .3934483     4.69   0.000     1.608687    3.181021
         age |   .9882719   .0118834    -0.98   0.327     .9652533     1.01184
pyacctrati~2 |   1.593294   .2054799     3.61   0.000     1.237429      2.0515
pyperstudlep |   1.023743   .0132044     1.82   0.069     .9981871    1.049953
pyperstude~s |   1.032752   .0079956     4.16   0.000     1.017199    1.048542
pyperstudw~e |   .9360063   .0708174    -0.87   0.382     .8070076    1.085625
pyperstudb~k |   .9213491   .0711449    -1.06   0.289     .7919469    1.071895
pyperstudl~o |   .9101148    .070786    -1.21   0.226      .781434    1.059986
pyperstudm~e |   .9789176   .0144336    -1.45   0.148     .9510331     1.00762
       Asian |  (omitted)
       Black |   1.915368   .6226991     2.00   0.046     1.012793    3.622293
      Latino |   .6542969   .5451702    -0.51   0.611     .1278029    3.349724
       Other |   361775.3   1.81e+08     0.03   0.980            0           .
   AsianMale |  (omitted)
   BlackMale |   1.282063    .638944     0.50   0.618      .482719    3.405055
  LatinoMale |   5.240263   6.338945     1.37   0.171     .4894264    56.10724
   OtherMale |   8.63e-12   6.63e-09    -0.03   0.974            0           .
------------------------------------------------------------------------------
```

```
---------->  region = 8

note: AsianMale omitted because of collinearity
note: LatinoMale omitted because of collinearity
Iteration 0:   log likelihood = -404.57753
Iteration 1:   log likelihood = -362.63957
Iteration 2:   log likelihood = -361.17093
Iteration 3:   log likelihood = -361.00247
Iteration 4:   log likelihood = -360.96854
Iteration 5:   log likelihood = -360.96135
Iteration 6:   log likelihood = -360.95975
Iteration 7:   log likelihood = -360.95936
Iteration 8:   log likelihood = -360.95928
Iteration 9:   log likelihood = -360.95926

Multinomial logistic regression                 Number of obs   =        386
                                                LR chi2(34)     =      87.24
                                                Prob > chi2     =     0.0000
Log likelihood = -360.95926                     Pseudo R2       =     0.1078

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.039833   .0217335     1.87   0.062     .9980964    1.083314
       exper |    .997068   .0282097    -0.10   0.917      .943283     1.05392
        male |   3.096367   .9659679     3.62   0.000     1.679982      5.7069
         age |   .9723437   .0237938    -1.15   0.252     .9268094    1.020115
pyacctrati~2 |   1.044688   .2490599     0.18   0.855     .6547191    1.666933
pyperstudlep |    1.00339   .0286508     0.12   0.906     .9487783    1.061146
pyperstude~s |   .9699712   .0136469    -2.17   0.030     .9435891    .9970909
pyperstudw~e |   1.046827    .149223     0.32   0.748     .7916591    1.384242
pyperstudb~k |   1.084034   .1555025     0.56   0.574     .8183517    1.435973
pyperstudl~o |   1.077271   .1557896     0.51   0.607     .8113873    1.430281
pyperstudm~e |   1.059325   .0442541     1.38   0.168     .9760445    1.149711
       Asian |   .8481954   3121.093    -0.00   1.000            0           .
       Black |   2.303838   1.235123     1.56   0.120     .8055814    6.588618
      Latino |    4722674   2.89e+09     0.03   0.980            0           .
       Other |   9.528798   12.35322     1.74   0.082     .7508143    120.9327
   AsianMale |  (omitted)
   BlackMale |    1.02366   1.339432     0.02   0.986     .0787735    13.30242
  LatinoMale |  (omitted)
   OtherMale |   2.54e-08   .0000306    -0.01   0.988            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.015824   .0186241     0.86   0.392     .9799695     1.05299
       exper |   1.004501   .0256007     0.18   0.860     .9555575    1.055952
        male |   2.039074   .5786144     2.51   0.012     1.169212     3.55609
         age |   1.010116   .0229351     0.44   0.658     .9661497    1.056083
pyacctrati~2 |   1.505513   .3049403     2.02   0.043     1.012219    2.239209
pyperstudlep |   1.015945   .0276516     0.58   0.561     .9631694    1.071613
pyperstude~s |    1.03881   .0136359     2.90   0.004     1.012425    1.065882
pyperstudw~e |   .9926287   .1214637    -0.06   0.952     .7809603    1.261667
pyperstudb~k |   .9741496   .1204894    -0.21   0.832     .7644399    1.241389
pyperstudl~o |   .9667018   .1201141    -0.27   0.785     .7577562    1.233263
pyperstudm~e |   .9906346   .0347773    -0.27   0.789     .9247645    1.061197
       Asian |    2383120   5.02e+09     0.01   0.994            0           .
       Black |   1.259343   .7422737     0.39   0.696     .3966747      3.9981
      Latino |    1381133   8.44e+08     0.02   0.982            0           .
       Other |   3.321926   4.343739     0.92   0.359     .2560717    43.09414
   AsianMale |  (omitted)
   BlackMale |   2.595617   3.608898     0.69   0.493     .1701162    39.60369
  LatinoMale |  (omitted)
   OtherMale |   2.20e-07   .0002551    -0.01   0.989            0           .
```

```
-------------------------------------------------------------------------------


---------> region = 9

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -226.62976
Iteration 1:   log likelihood = -196.83376
Iteration 2:   log likelihood = -195.37379
Iteration 3:   log likelihood = -194.85199
Iteration 4:   log likelihood =  -194.7893
Iteration 5:   log likelihood = -194.77363
Iteration 6:   log likelihood = -194.77013
Iteration 7:   log likelihood = -194.76932
Iteration 8:   log likelihood = -194.76915
Iteration 9:   log likelihood = -194.76912
Iteration 10:  log likelihood = -194.76912

Multinomial logistic regression                 Number of obs   =        211
                                                LR chi2(36)     =      63.72
                                                Prob > chi2     =     0.0030
Log likelihood = -194.76912                     Pseudo R2       =     0.1406

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9947532   .0325906    -0.16   0.872     .9328845    1.060725
       exper |   .9858982   .0413161    -0.34   0.735     .9081565    1.070295
        male |   .6033021   .2718243    -1.12   0.262     .2494691    1.458992
         age |   .9783468   .0331489    -0.65   0.518     .9154865    1.045523
pyacctrati~2 |   2.130803   .8288964     1.94   0.052     .9940779    4.567371
pyperstudlep |   1.058388   .0698914     0.86   0.390     .9298975    1.204632
pyperstude~s |   .9944895   .0193975    -0.28   0.777     .9571886    1.033244
pyperstudw~e |   .7045559   .0954516    -2.58   0.010     .5402523     .918828
pyperstudb~k |   .6973079   .1009624    -2.49   0.013     .5250252    .9261239
pyperstudl~o |   .7200391   .0979458    -2.41   0.016     .5515291    .9400342
pyperstudm~e |   .9832911   .0430404    -0.38   0.700     .9024508    1.071373
       Asian |   5.07e+08   4.95e+12     0.00   0.998            0           .
       Black |   4.241806   5.933359     1.03   0.302     .2734676    65.79541
      Latino |   3.12e-08   .0002018    -0.00   0.998            0           .
       Other |   1.361508   2.028201     0.21   0.836      .073453    25.23663
   AsianMale |  (omitted)
   BlackMale |   1.963406   3.713499     0.36   0.721     .0482042    79.97146
  LatinoMale |   2.36e+07   2.01e+11     0.00   0.998            0           .
   OtherMale |   2.28e+07   6.43e+10     0.01   0.995            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |    1.00647   .0242396     0.27   0.789     .9600649    1.055118
       exper |   1.034267   .0341759     1.02   0.308     .9694063    1.103467
        male |   2.118329   .7891906     2.01   0.044     1.020646    4.396544
         age |   .9814333   .0298649    -0.62   0.538     .9246105    1.041748
pyacctrati~2 |   2.547139   .8600256     2.77   0.006     1.314165    4.936914
pyperstudlep |   1.020488   .0606557     0.34   0.733     .9082681    1.146572
pyperstude~s |    1.00153   .0158554     0.10   0.923      .970931    1.033093
pyperstudw~e |   1.064385   .1184489     0.56   0.575     .8558024    1.323804
pyperstudb~k |   1.049597   .1232695     0.41   0.680     .8337843     1.32127
pyperstudl~o |   1.072702    .120686     0.62   0.533     .8604255    1.337349
pyperstudm~e |   1.010784   .0353851     0.31   0.759     .9437567    1.082573
       Asian |   .9245232   12844.19    -0.00   1.000            0           .
       Black |    2.94845    4.49477     0.71   0.478     .1485861    58.50721
      Latino |   9.40e-08   .0004761    -0.00   0.997            0           .
       Other |   2.94e-07   .0008248    -0.01   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   3.18e-08   .0001064    -0.01   0.996            0           .
```

```
  LatinoMale |   1.65e+14   1.03e+18     0.01   0.996           0           .
   OtherMale |   3.68e+13   1.46e+17     0.01   0.994           0           .
------------------------------------------------------------------------------


---------->  region = 10

Iteration 0:   log likelihood =  -4184.635
Iteration 1:   log likelihood = -3923.0097
Iteration 2:   log likelihood = -3915.8349
Iteration 3:   log likelihood = -3915.8016
Iteration 4:   log likelihood = -3915.8016

Multinomial logistic regression                 Number of obs   =       3949
                                                LR chi2(38)     =     537.67
                                                Prob > chi2     =     0.0000
Log likelihood = -3915.8016                     Pseudo R2       =     0.0642

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.012255   .0064434     1.91   0.056     .9997043    1.024963
       exper |   1.035686   .0079586     4.56   0.000     1.020204    1.051402
        male |   1.263624   .1298366     2.28   0.023     1.033136    1.545533
         age |   .9613458   .0059647    -6.35   0.000     .9497261    .9731077
pyacctrati~2 |   .9350626   .0531131    -1.18   0.237     .8365484    1.045178
pyperstudlep |   .9976922   .0040071    -0.58   0.565     .9898692    1.005577
pyperstude~s |   .9895051   .0036329    -2.87   0.004     .9824102    .9966512
pyperstudw~e |   .9894652   .0069715    -1.50   0.133     .9758952    1.003224
pyperstudb~k |   .9890068   .0078492    -1.39   0.164     .9737416    1.004511
pyperstudl~o |   .9967232   .0077889    -0.42   0.674     .9815735    1.012107
pyperstudm~e |   1.009895   .0061043     1.63   0.103     .9980016     1.02193
       Asian |   1.550807   .8231954     0.83   0.408     .5479298    4.389251
       Black |   1.274439   .1556836     1.99   0.047     1.003084      1.6192
      Latino |   1.835121   .2972105     3.75   0.000     1.336001    2.520709
       Other |   1.102022   .4509252     0.24   0.812     .4941919     2.45745
   AsianMale |   .8650838   .6886984    -0.18   0.856     .1817237    4.118176
   BlackMale |   1.552638   .3063964     2.23   0.026     1.054617    2.285839
  LatinoMale |   1.081433   .2824225     0.30   0.764     .6481919    1.804247
   OtherMale |   1.339512   .9149624     0.43   0.669     .3511785    5.109347
-------------+----------------------------------------------------------------
3            |
      tenure |   1.023125   .0065382     3.58   0.000      1.01039     1.03602
       exper |   1.078667   .0094964     8.60   0.000     1.060214    1.097441
        male |   1.386558   .1580676     2.87   0.004     1.108922    1.733704
         age |   .9652008    .007297    -4.68   0.000     .9510043    .9796092
pyacctrati~2 |   1.516129   .0957896     6.59   0.000     1.339543    1.715992
pyperstudlep |   1.017124   .0047959     3.60   0.000     1.007767    1.026567
pyperstude~s |   1.016082     .00406     3.99   0.000     1.008155     1.02407
pyperstudw~e |   1.002659   .0076969     0.35   0.729     .9876862    1.017859
pyperstudb~k |    .987997   .0088038    -1.36   0.175     .9708917    1.005404
pyperstudl~o |   .9754553   .0082885    -2.92   0.003     .9593447    .9918365
pyperstudm~e |   1.004829   .0077392     0.63   0.532     .9897744    1.020113
       Asian |   1.722372    1.10515     0.85   0.397     .4897322    6.057527
       Black |   .8115995   .1234802    -1.37   0.170     .6023326    1.093572
      Latino |   1.730119   .3149392     3.01   0.003     1.210958    2.471855
       Other |   .6863677   .3705239    -0.70   0.486     .2382595    1.977258
   AsianMale |   .2647262   .3375589    -1.04   0.297     .0217475    3.222442
   BlackMale |   1.657947   .4091204     2.05   0.040     1.022176    2.689156
  LatinoMale |   1.186309   .3504529     0.58   0.563     .6648756    2.116679
   OtherMale |   1.687967   1.385778     0.64   0.524     .3377143    8.436817
------------------------------------------------------------------------------
```

```
---------->  region = 11

Iteration 0:   log likelihood = -3027.7975
Iteration 1:   log likelihood = -2850.9061
Iteration 2:   log likelihood =   -2845.95
Iteration 3:   log likelihood =  -2845.931
Iteration 4:   log likelihood =  -2845.931

Multinomial logistic regression                 Number of obs   =       2829
                                                LR chi2(38)     =     363.73
                                                Prob > chi2     =     0.0000
Log likelihood =  -2845.931                     Pseudo R2       =     0.0601

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9987194   .0075627    -0.17   0.866     .9840063    1.013652
       exper |   1.020041   .0091073     2.22   0.026     1.002347    1.038048
        male |   1.132402   .1210774     1.16   0.245     .9183106    1.396407
         age |    .974202   .0069598    -3.66   0.000     .9606561    .9879389
pyacctrati~2 |   1.063492   .0758538     0.86   0.388      .924745    1.223056
pyperstudlep |   1.022035   .0055027     4.05   0.000     1.011307    1.032877
pyperstude~s |   .9973109   .0041155    -0.65   0.514     .9892771     1.00541
pyperstudw~e |   1.000438   .0101663     0.04   0.966     .9807096    1.020563
pyperstudb~k |   .9959005   .0116243    -0.35   0.725     .9733759    1.018946
pyperstudl~o |    .990236   .0109037    -0.89   0.373     .9690941    1.011839
pyperstudm~e |   1.005868   .0065116     0.90   0.366     .9931857    1.018711
       Asian |   1.973609   1.352026     0.99   0.321     .5153989    7.557514
       Black |   1.505714   .2608832     2.36   0.018     1.072164    2.114576
      Latino |   1.392148    .306917     1.50   0.133     .9037055    2.144587
       Other |   .6820335   .2853861    -0.91   0.360     .3003544    1.548736
   AsianMale |   .6003962   .6432699    -0.48   0.634      .073528     4.90256
   BlackMale |   2.227425    .666144     2.68   0.007     1.239478    4.002832
  LatinoMale |   1.304484   .4489042     0.77   0.440     .6645378    2.560693
   OtherMale |   1.039268   .7778293     0.05   0.959     .2396927    4.506096
-------------+----------------------------------------------------------------
3            |
      tenure |    1.00416   .0075767     0.55   0.582     .9894189     1.01912
       exper |   1.085962   .0112705     7.95   0.000     1.064095    1.108278
        male |   1.533822   .1847639     3.55   0.000     1.211265    1.942274
         age |   .9754714   .0086819    -2.79   0.005     .9586028    .9926368
pyacctrati~2 |   1.678979   .1359916     6.40   0.000     1.432521     1.96784
pyperstudlep |   1.022252   .0064188     3.51   0.000     1.009749    1.034911
pyperstude~s |   1.027055    .004926     5.57   0.000     1.017446    1.036756
pyperstudw~e |   1.013658    .012241     1.12   0.261      .989948    1.037936
pyperstudb~k |   1.003066   .0139814     0.22   0.826     .9760341    1.030847
pyperstudl~o |   .9867969   .0129293    -1.01   0.310     .9617786    1.012466
pyperstudm~e |   .9797906   .0093582    -2.14   0.033     .9616194    .9983052
       Asian |   .9115647   .8166719    -0.10   0.918      .157469    5.276913
       Black |   1.150253   .2570651     0.63   0.531       .74227     1.78248
      Latino |   1.231811   .3232171     0.79   0.427     .7365387    2.060119
       Other |   .6749972   .3570278    -0.74   0.457     .2393723    1.903399
   AsianMale |   1.394074    1.82829     0.25   0.800     .1066493    18.22273
   BlackMale |   1.709499   .6612658     1.39   0.166     .8009554    3.648626
  LatinoMale |   1.412332   .5691899     0.86   0.392     .6410475    3.111595
   OtherMale |   1.679585   1.374935     0.63   0.526     .3375943    8.356205
------------------------------------------------------------------------------


---------->  region = 12

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -975.46935
Iteration 1:   log likelihood = -906.47881
```

```
Iteration 2:   log likelihood =  -904.9292
Iteration 3:   log likelihood = -904.76597
Iteration 4:   log likelihood = -904.73629
Iteration 5:   log likelihood = -904.72878
Iteration 6:   log likelihood = -904.72724
Iteration 7:   log likelihood =  -904.7269
Iteration 8:   log likelihood = -904.72683
Iteration 9:   log likelihood = -904.72681

Multinomial logistic regression                 Number of obs   =        906
                                                LR chi2(36)     =     141.49
                                                Prob > chi2     =     0.0000
Log likelihood = -904.72681                     Pseudo R2       =     0.0725

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.004289   .0122452     0.35   0.726     .9805736    1.028579
       exper |   1.013494   .0159093     0.85   0.393     .9827871     1.04516
        male |   .8867686   .1690762    -0.63   0.529     .6102608    1.288561
         age |   .9781301   .0124646    -1.74   0.083     .9540024    1.002868
pyacctrati~2 |    1.15102   .1647504     0.98   0.326     .8694541    1.523768
pyperstudlep |   1.006074   .0160903     0.38   0.705     .9750271     1.03811
pyperstude~s |   1.001232   .0077202     0.16   0.873     .9862149    1.016479
pyperstudw~e |   .9358343   .0526352    -1.18   0.238     .8381541    1.044898
pyperstudb~k |   .9548166   .0564395    -0.78   0.434     .8503646    1.072099
pyperstudl~o |   .9355405   .0527051    -1.18   0.237     .8377391     1.04476
pyperstudm~e |   1.013806   .0130255     1.07   0.286     .9885953     1.03966
       Asian |    6513665   8.87e+09     0.01   0.991            0           .
       Black |   .6771458   .2060185    -1.28   0.200     .3729993    1.229296
      Latino |   .3980571   .1895353    -1.93   0.053      .156547    1.012152
       Other |   1.238134    2375.43     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   2.855062   1.491512     2.01   0.045     1.025509    7.948616
  LatinoMale |   4.333226   3.107239     2.04   0.041     1.062766     17.6679
   OtherMale |   2.82e-06   .0059637    -0.01   0.995            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9971333   .0115535    -0.25   0.804     .9747441    1.020037
       exper |   1.057252    .017596     3.35   0.001     1.023321    1.092308
        male |   .9827416   .1906461    -0.09   0.928     .6719103    1.437366
         age |    .970968   .0138659    -2.06   0.039     .9441682    .9985286
pyacctrati~2 |   1.508591   .2132653     2.91   0.004     1.143509    1.990231
pyperstudlep |    1.05382   .0173972     3.18   0.001     1.020268    1.088476
pyperstude~s |    1.01649    .008579     1.94   0.053     .9998133    1.033444
pyperstudw~e |   1.055376   .0685103     0.83   0.406     .9292897     1.19857
pyperstudb~k |   1.059003    .071994     0.84   0.399      .926894    1.209941
pyperstudl~o |   1.018294   .0668834     0.28   0.783     .8952921    1.158195
pyperstudm~e |   .9824544   .0155518    -1.12   0.263     .9524414    1.013413
       Asian |   1.521186   3333.954     0.00   1.000            0           .
       Black |   .5792912   .2202819    -1.44   0.151     .2749275    1.220607
      Latino |   .2639256   .1729681    -2.03   0.042      .073052    .9535223
       Other |   1.15e+07   1.43e+10     0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   4.623413   2.695148     2.63   0.009     1.474917    14.49298
  LatinoMale |   7.109468   6.264922     2.23   0.026     1.264012    39.98738
   OtherMale |   4.08e-07   .0005061    -0.01   0.991            0           .
------------------------------------------------------------------------------


---------->  region = 13

Iteration 0:   log likelihood = -1751.1751
Iteration 1:   log likelihood = -1657.5045
```

```
Iteration 2:   log likelihood =  -1655.853
Iteration 3:   log likelihood = -1655.7971
Iteration 4:   log likelihood = -1655.7883
Iteration 5:   log likelihood = -1655.7862
Iteration 6:   log likelihood = -1655.7858
Iteration 7:   log likelihood = -1655.7857
Iteration 8:   log likelihood = -1655.7856

Multinomial logistic regression                 Number of obs   =       1609
                                                LR chi2(38)     =     190.78
                                                Prob > chi2     =     0.0000
Log likelihood = -1655.7856                     Pseudo R2       =     0.0545

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |   1.017763   .0105396     1.70   0.089     .9973139    1.038631
       exper |   1.023271   .0106049     2.22   0.026     1.002695    1.044269
        male |   1.027443   .1547278     0.18   0.857     .7648409    1.380208
         age |   1.007706   .0083583     0.93   0.355     .9914562    1.024222
pyacctrati~2 |    .942233   .0888541    -0.63   0.528     .7832288    1.133517
pyperstudlep |     1.0115   .0065983     1.75   0.080     .9986499    1.024516
pyperstude~s |   .9998981   .0066682    -0.02   0.988     .9869138    1.013053
pyperstudw~e |   1.040072   .0164484     2.48   0.013     1.008328    1.072815
pyperstudb~k |    1.04594   .0203995     2.30   0.021     1.006712    1.086696
pyperstudl~o |   1.031567   .0174496     1.84   0.066     .9979275    1.066341
pyperstudm~e |   .9777195   .0105468    -2.09   0.037     .9572651    .9986109
       Asian |   .4673835   .5818247    -0.61   0.541     .0407428    5.361618
       Black |   .7627893   .1898177    -1.09   0.277     .4683665    1.242291
      Latino |   .7922674   .1687733    -1.09   0.274      .521848    1.202817
       Other |   1.030446   .8563657     0.04   0.971     .2021264    5.253242
   AsianMale |    1136198   7.75e+08     0.02   0.984            0           .
   BlackMale |   .6039362   .2903943    -1.05   0.294     .2353437    1.549814
  LatinoMale |   .4730928   .1728718    -2.05   0.041     .2311589     .968238
   OtherMale |    1.73886   1.920449     0.50   0.616     .1996054    15.14806
-------------+----------------------------------------------------------------
2            |  (base outcome)
-------------+----------------------------------------------------------------
3            |
      tenure |    1.02359   .0109911     2.17   0.030     1.002273     1.04536
       exper |   1.054818   .0122448     4.60   0.000     1.031089    1.079092
        male |   .9416692   .1632279    -0.35   0.729     .6704279    1.322649
         age |   1.003477   .0096606     0.36   0.718       .98472    1.022591
pyacctrati~2 |   1.478722   .1514186     3.82   0.000     1.209832    1.807374
pyperstudlep |   1.003751   .0070368     0.53   0.593     .9900537    1.017638
pyperstude~s |   1.019554   .0073934     2.67   0.008     1.005166    1.034149
pyperstudw~e |   1.013957    .016664     0.84   0.399     .9818167     1.04715
pyperstudb~k |   1.006955   .0207744     0.34   0.737     .9670502    1.048506
pyperstudl~o |   .9974302   .0175653    -0.15   0.884     .9635901    1.032459
pyperstudm~e |   .9846445   .0106467    -1.43   0.152     .9639969    1.005734
       Asian |   2.864083   2.569887     1.17   0.241     .4934221    16.62465
       Black |   .7099927    .207397    -1.17   0.241     .4005052    1.258634
      Latino |   .8728402   .2047723    -0.58   0.562     .5511108     1.38239
       Other |   2.050053   1.598997     0.92   0.357     .4444738    9.455486
   AsianMale |   536183.9   3.66e+08     0.02   0.985            0           .
   BlackMale |   .4957795   .3229864    -1.08   0.281     .1382785    1.777552
  LatinoMale |   1.358334   .4854862     0.86   0.392     .6741807    2.736762
   OtherMale |    .567072   .6915922    -0.47   0.642     .0519429    6.190852
------------------------------------------------------------------------------


---------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
```

```
Iteration 0:   log likelihood = -233.85337
Iteration 1:   log likelihood = -200.47233
Iteration 2:   log likelihood = -197.89815
Iteration 3:   log likelihood = -197.74345
Iteration 4:   log likelihood = -197.70692
Iteration 5:   log likelihood = -197.69964
Iteration 6:   log likelihood = -197.69809
Iteration 7:   log likelihood = -197.69773
Iteration 8:   log likelihood = -197.69765
Iteration 9:   log likelihood = -197.69763

Multinomial logistic regression                 Number of obs   =        244
                                                LR chi2(32)     =      72.31
                                                Prob > chi2     =     0.0001
Log likelihood = -197.69763                     Pseudo R2       =     0.1546

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.019335   .0330014     0.59   0.554     .9566629    1.086113
       exper |   .9637525   .0397176    -0.90   0.370     .8889684    1.044828
        male |   1.247065   .6134862     0.45   0.654     .4754949    3.270639
         age |   1.053991   .0373629     1.48   0.138     .9832472    1.129825
pyacctrati~2 |   .7116031   .2688178    -0.90   0.368     .3393789    1.492076
pyperstudlep |   .8939371   .1207452    -0.83   0.406     .6860157    1.164876
pyperstude~s |   .9976973   .0225076    -0.10   0.919     .9545443    1.042801
pyperstudw~e |    .746876   .1866568    -1.17   0.243     .4576348    1.218928
pyperstudb~k |   .7283939   .2039845    -1.13   0.258     .4207169     1.26108
pyperstudl~o |   .7614959   .1893489    -1.10   0.273     .4677492    1.239716
pyperstudm~e |   .9833166   .0638095    -0.26   0.795     .8658787    1.116682
       Asian |  (omitted)
       Black |   1.457888   9099.936     0.00   1.000            0           .
      Latino |   2.306985   8637.773     0.00   1.000            0           .
       Other |   5.94e-07   .0028378    -0.00   0.998            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   2.736539    10246.1     0.00   1.000            0           .
   OtherMale |    2390749   1.55e+10     0.00   0.998            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9987342   .0224264    -0.06   0.955     .9557325    1.043671
       exper |   1.051824   .0340644     1.56   0.119     .9871339    1.120754
        male |   2.623662   .9376259     2.70   0.007     1.302301    5.285722
         age |   1.001251   .0276006     0.05   0.964     .9485902    1.056835
pyacctrati~2 |    1.93496    .440126     2.90   0.004     1.238961    3.021943
pyperstudlep |    1.04848   .0634959     0.78   0.434     .9311322    1.180617
pyperstude~s |   1.060976   .0162295     3.87   0.000     1.029639    1.093267
pyperstudw~e |   .9662443   .1796784    -0.18   0.853     .6711218    1.391145
pyperstudb~k |   .9116257   .1897653    -0.44   0.657     .6062186    1.370894
pyperstudl~o |   .9486331   .1758485    -0.28   0.776     .6596456    1.364225
pyperstudm~e |    .976587   .0250707    -0.92   0.356      .928665    1.026982
       Asian |  (omitted)
       Black |    8878866   2.37e+10     0.01   0.995            0           .
      Latino |    9864423   1.73e+10     0.01   0.993            0           .
       Other |   1.77e-07   .0004478    -0.01   0.995            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   3.10e-07   .0005445    -0.01   0.993            0           .
   OtherMale |   9.20e+13   2.89e+17     0.01   0.992            0           .
------------------------------------------------------------------------------


---------->  region = 15
```

```
note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -288.45687
Iteration 1:   log likelihood = -260.90471
Iteration 2:   log likelihood = -259.21963
Iteration 3:   log likelihood = -258.94688
Iteration 4:   log likelihood = -258.93387
Iteration 5:   log likelihood = -258.93288
Iteration 6:   log likelihood = -258.93266
Iteration 7:   log likelihood = -258.93262
Iteration 8:   log likelihood = -258.93262

Multinomial logistic regression                 Number of obs   =        278
                                                LR chi2(30)     =      59.05
                                                Prob > chi2     =     0.0012
Log likelihood = -258.93262                     Pseudo R2       =     0.1024

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.040236   .0344054     1.19   0.233     .9749419    1.109903
       exper |   .9276889   .0330918    -2.10   0.035     .8650456    .9948686
        male |    1.35019   .6608073     0.61   0.540     .5173701    3.523613
         age |   1.003614   .0268543     0.13   0.893     .9523372    1.057652
pyacctrati~2 |   .9419945   .3115964    -0.18   0.857     .4925891    1.801407
pyperstudlep |   .9826276   .0261652    -0.66   0.510     .9326599    1.035272
pyperstude~s |   1.031145   .0162809     1.94   0.052     .9997239    1.063554
pyperstudw~e |   .9051361     .20323    -0.44   0.657     .5828996     1.40551
pyperstudb~k |   .8863631   .2180535    -0.49   0.624     .5472784    1.435539
pyperstudl~o |   .9024818   .2014164    -0.46   0.646     .5827292    1.397688
pyperstudm~e |   .9965856   .0298171    -0.11   0.909     .9398257    1.056774
       Asian |  (omitted)
       Black |   10.91673   14.16506     1.84   0.065     .8582467    138.8588
      Latino |   3.812594   2.084959     2.45   0.014     1.305364     11.1355
       Other |   2.53e+07   9.47e+10     0.00   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   .8784341   .7266994    -0.16   0.875     .1735955    4.445084
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |    .996016   .0204971    -0.19   0.846     .9566419    1.037011
       exper |    1.00515   .0250357     0.21   0.837     .9572599    1.055437
        male |   1.204654   .4049459     0.55   0.580     .6233468    2.328063
         age |   .9773385   .0217832    -1.03   0.304     .9355633    1.020979
pyacctrati~2 |   1.723468   .3838003     2.44   0.015     1.113906      2.6666
pyperstudlep |    .981615   .0234321    -0.78   0.437     .9367467    1.028632
pyperstude~s |    1.02928   .0119619     2.48   0.013       1.0061    1.052993
pyperstudw~e |   1.219886   .2442812     0.99   0.321     .8238858    1.806225
pyperstudb~k |   1.139719   .2486008     0.60   0.549     .7432413    1.747696
pyperstudl~o |   1.212346   .2421581     0.96   0.335     .8196049    1.793281
pyperstudm~e |   1.001519   .0285066     0.05   0.957     .9471766    1.058978
       Asian |  (omitted)
       Black |   1.20e-06   .0015594    -0.01   0.992            0           .
      Latino |   .8509106   .4543483    -0.30   0.762     .2987998    2.423191
       Other |    .442259   2481.418    -0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   1.037718   .8596601     0.04   0.964     .2046125    5.262918
   OtherMale |  (omitted)
------------------------------------------------------------------------------
```

```
---------->  region = 16

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -527.46226
Iteration 1:   log likelihood = -479.49592
Iteration 2:   log likelihood = -478.07336
Iteration 3:   log likelihood = -478.00469
Iteration 4:   log likelihood =   -477.989
Iteration 5:   log likelihood = -477.98554
Iteration 6:   log likelihood = -477.98477
Iteration 7:   log likelihood = -477.98465
Iteration 8:   log likelihood = -477.98463

Multinomial logistic regression                 Number of obs   =        483
                                                LR chi2(34)     =      98.96
                                                Prob > chi2     =     0.0000
Log likelihood = -477.98463                     Pseudo R2       =     0.0938

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.057022   .0206753     2.84   0.005     1.017266    1.098331
       exper |   .9405088   .0245824    -2.35   0.019     .8935415    .9899449
        male |   .9016129    .240968    -0.39   0.698     .5339802    1.522352
         age |   .9823784   .0208812    -0.84   0.403     .9422928    1.024169
pyacctrati~2 |   1.271998   .2418467     1.27   0.206     .8762871    1.846403
pyperstudlep |   1.004485   .0160139     0.28   0.779     .9735834    1.036367
pyperstude~s |   .9906203   .0097042    -0.96   0.336     .9717818    1.009824
pyperstudw~e |   .9453261     .03747    -1.42   0.156     .8746664    1.021694
pyperstudb~k |   .9805625   .0437446    -0.44   0.660     .8984661     1.07016
pyperstudl~o |   .9531824   .0356853    -1.28   0.200     .8857449    1.025754
pyperstudm~e |   .9886841   .0165012    -0.68   0.495     .9568657    1.021561
       Asian |  (omitted)
       Black |    .917815   .7893434    -0.10   0.921     .1700987    4.952328
      Latino |   5.061503   4.138785     1.98   0.047     1.019185    25.13657
       Other |   1.773656    2.29505     0.44   0.658     .1404249    22.40241
   AsianMale |  (omitted)
   BlackMale |   326557.4   2.34e+08     0.02   0.986            0           .
  LatinoMale |   .1672586   .1799288    -1.66   0.096     .0203098    1.377432
   OtherMale |    9413962   1.76e+10     0.01   0.993            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.029929   .0165665     1.83   0.067     .9979656    1.062916
       exper |   .9959814   .0220389    -0.18   0.856     .9537093    1.040127
        male |   2.182289   .5628041     3.03   0.002     1.316408    3.617712
         age |   1.001794   .0204786     0.09   0.930     .9624496    1.042746
pyacctrati~2 |   1.858932   .3318252     3.47   0.001     1.310151     2.63758
pyperstudlep |   1.043748   .0161831     2.76   0.006     1.012506    1.075953
pyperstude~s |   1.003459   .0089216     0.39   0.698     .9861248    1.021099
pyperstudw~e |   1.020591   .0461914     0.45   0.652     .9339572    1.115262
pyperstudb~k |   1.030064   .0520572     0.59   0.558     .9329246    1.137319
pyperstudl~o |   1.004116   .0436191     0.09   0.925     .9221624    1.093353
pyperstudm~e |   .9639379   .0229155    -1.54   0.122     .9200545    1.009914
       Asian |  (omitted)
       Black |   1.286312   1.282056     0.25   0.801     .1823733     9.07259
      Latino |    6.71126    5.73612     2.23   0.026     1.256844     35.8366
       Other |   1.234899   1.814135     0.14   0.886     .0693697    21.98331
   AsianMale |  (omitted)
   BlackMale |   136937.8   9.81e+07     0.02   0.987            0           .
  LatinoMale |   .1596307   .1722902    -1.70   0.089     .0192491    1.323799
   OtherMale |    .578713   1591.884    -0.00   1.000            0           .
------------------------------------------------------------------------------
```

```
---------->  region = 17

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -513.40171
Iteration 1:   log likelihood =  -458.6916
Iteration 2:   log likelihood = -455.62845
Iteration 3:   log likelihood = -455.28295
Iteration 4:   log likelihood = -455.22573
Iteration 5:   log likelihood =  -455.2128
Iteration 6:   log likelihood = -455.20955
Iteration 7:   log likelihood = -455.20893
Iteration 8:   log likelihood = -455.20883
Iteration 9:   log likelihood = -455.20881

Multinomial logistic regression                 Number of obs   =        511
                                                LR chi2(36)     =     116.39
                                                Prob > chi2     =     0.0000
Log likelihood = -455.20881                     Pseudo R2       =     0.1133

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.014452   .0222762     0.65   0.513     .9717173    1.059065
       exper |   .9973685   .0287461    -0.09   0.927     .9425889    1.055332
        male |   1.589629   .4676178     1.58   0.115     .8930991    2.829384
         age |   .9853919    .023884    -0.61   0.544     .9396745    1.033333
pyacctrati~2 |   .7486588    .157203    -1.38   0.168      .496077    1.129845
pyperstudlep |   1.030756   .0297162     1.05   0.293     .9741284    1.090676
pyperstude~s |   .9899423   .0113048    -0.89   0.376     .9680315    1.012349
pyperstudw~e |   1.066067   .0896944     0.76   0.447     .9039993    1.257191
pyperstudb~k |   1.072398   .0922181     0.81   0.416     .9060647    1.269267
pyperstudl~o |   1.053966   .0884088     0.63   0.531     .8941819    1.242301
pyperstudm~e |   1.010845   .0131069     0.83   0.405     .9854802    1.036864
       Asian |   4.38e-07   .0011857    -0.01   0.996            0           .
       Black |   6.50e-07    .000743    -0.01   0.990            0           .
      Latino |   .7550292   .5150505    -0.41   0.680     .1982935    2.874876
       Other |   5.97e-07    .001614    -0.01   0.996            0           .
   AsianMale |  (omitted)
   BlackMale |   2.83e+12   3.72e+15     0.02   0.983            0           .
  LatinoMale |   5.060202   4.310158     1.90   0.057     .9530922    26.86587
   OtherMale |    1.52132   4784.356     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.042821   .0174737     2.50   0.012     1.009129    1.077637
       exper |   1.001446   .0218202     0.07   0.947      .959579    1.045139
        male |   2.965432   .7365042     4.38   0.000     1.822556    4.824976
         age |   1.021081    .019514     1.09   0.275     .9835415    1.060053
pyacctrati~2 |   1.500819   .2627079     2.32   0.020     1.064956    2.115072
pyperstudlep |    1.02295   .0215564     1.08   0.282     .9815613    1.066085
pyperstude~s |   1.029442   .0107646     2.77   0.006     1.008559    1.050758
pyperstudw~e |   1.060872   .0765128     0.82   0.413     .9210262    1.221951
pyperstudb~k |   1.033577   .0766102     0.45   0.656     .8938214    1.195185
pyperstudl~o |    1.04883   .0757055     0.66   0.509     .9104681    1.208219
pyperstudm~e |   .9780046   .0179616    -1.21   0.226     .9434267     1.01385
       Asian |   7.05e-07   .0013777    -0.01   0.994            0           .
       Black |   1.951918   2.514181     0.52   0.604     .1563384    24.37011
      Latino |   .8005759   .4152541    -0.43   0.668     .2896604    2.212666
       Other |   1.02e-06   .0019988    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |    1582078   1.03e+09     0.02   0.982            0           .
  LatinoMale |   1.810616   1.385878     0.78   0.438     .4039256    8.116171
   OtherMale |    1246626   2.43e+09     0.01   0.994            0           .
```

```
-------------------------------------------------------------------------------


---------> region = 18

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -429.12493
Iteration 1:   log likelihood = -386.92855
Iteration 2:   log likelihood = -384.20424
Iteration 3:   log likelihood = -384.13484
Iteration 4:   log likelihood = -384.11988
Iteration 5:   log likelihood = -384.11616
Iteration 6:   log likelihood = -384.11545
Iteration 7:   log likelihood = -384.11531
Iteration 8:   log likelihood =  -384.1153

Multinomial logistic regression                 Number of obs   =        404
                                                LR chi2(36)     =      90.02
                                                Prob > chi2     =     0.0000
Log likelihood =  -384.1153                     Pseudo R2       =     0.1049

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.017109   .0230657     0.75   0.454     .9728914    1.063337
       exper |   .9631581   .0253881    -1.42   0.154      .914662    1.014226
        male |   .7045029   .2508972    -0.98   0.325      .350543    1.415873
         age |   1.001965   .0204042     0.10   0.923     .9627611    1.042765
pyacctrati~2 |   .6568723   .1721501    -1.60   0.109     .3930086    1.097893
pyperstudlep |   .9794514   .0203671    -1.00   0.318     .9403352    1.020195
pyperstude~s |   .9851236   .0110311    -1.34   0.181     .9637386    1.006983
pyperstudw~e |   1.023484   .1252911     0.19   0.850     .8051563    1.301014
pyperstudb~k |   1.116875   .1442713     0.86   0.392     .8670641    1.438658
pyperstudl~o |   1.043753   .1260261     0.35   0.723     .8237988    1.322436
pyperstudm~e |   1.015321   .0155188     0.99   0.320     .9853558    1.046197
       Asian |   3.52e-06   .0049019    -0.01   0.993            0           .
       Black |   2.946187   2.675782     1.19   0.234     .4968015     17.4718
      Latino |   2.116843   .8409254     1.89   0.059     .9717285    4.611394
       Other |   .6689498   1789.444    -0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   .4345843   .6820938    -0.53   0.595     .0200487    9.420234
  LatinoMale |   .9913051   .5726132    -0.02   0.988     .3195383     3.07533
   OtherMale |    2.02928   7676.824     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.007155    .018158     0.40   0.693     .9721873     1.04338
       exper |   1.046261   .0264537     1.79   0.074     .9956764    1.099416
        male |   1.115181   .3538145     0.34   0.731     .5988033    2.076858
         age |   .9835917   .0211741    -0.77   0.442     .9429545     1.02598
pyacctrati~2 |   1.447453    .340168     1.57   0.116     .9131924    2.294281
pyperstudlep |    .965008   .0164575    -2.09   0.037      .933285    .9978093
pyperstude~s |    1.03363   .0115894     2.95   0.003     1.011163    1.056596
pyperstudw~e |   1.126592   .1257467     1.07   0.286     .9052281    1.402087
pyperstudb~k |   1.149445   .1366806     1.17   0.241     .9104823    1.451124
pyperstudl~o |   1.122497   .1253183     1.04   0.301     .9018931    1.397061
pyperstudm~e |   .9293071   .0191633    -3.56   0.000     .8924965    .9676359
       Asian |   7.12e-07   .0009136    -0.01   0.991            0           .
       Black |   3.249937   3.470126     1.10   0.270     .4008697    26.34795
      Latino |   1.458475   .5680777     0.97   0.333     .6797594     3.12927
       Other |   1.13e+07   1.79e+10     0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |   1.156223   1.661213     0.10   0.920     .0691945    19.32022
  LatinoMale |    .604222   .3498336    -0.87   0.384     .1942524    1.879433
   OtherMale |   .4150703   928.4922    -0.00   1.000            0           .
```

```
-------------------------------------------------------------------------------


---------> region = 19

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -891.50929
Iteration 1:   log likelihood = -821.81299
Iteration 2:   log likelihood = -818.76136
Iteration 3:   log likelihood = -818.47253
Iteration 4:   log likelihood =  -818.4276
Iteration 5:   log likelihood = -818.41735
Iteration 6:   log likelihood = -818.41481
Iteration 7:   log likelihood = -818.41432
Iteration 8:   log likelihood = -818.41424
Iteration 9:   log likelihood = -818.41422

Multinomial logistic regression                 Number of obs   =        827
                                                LR chi2(36)     =     146.19
                                                Prob > chi2     =     0.0000
Log likelihood = -818.41422                     Pseudo R2       =     0.0820

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |     .99894    .013993    -0.08   0.940     .9718873    1.026746
       exper |   1.040283   .0179586     2.29   0.022     1.005674    1.076084
        male |   .9992657   .3067604    -0.00   0.998     .5474874    1.823844
         age |   .9987879   .0126571    -0.10   0.924     .9742861    1.023906
pyacctrati~2 |   .9521497   .1565016    -0.30   0.765     .6899159    1.314057
pyperstudlep |   .9929135   .0062007    -1.14   0.255     .9808344    1.005141
pyperstude~s |   .9870928   .0099791    -1.29   0.199     .9677267    1.006846
pyperstudw~e |    .887784   .0940153    -1.12   0.261     .7213832    1.092568
pyperstudb~k |   .9799835   .1029208    -0.19   0.847     .7976696    1.203967
pyperstudl~o |   .9403606   .0904956    -0.64   0.523     .7787159    1.135559
pyperstudm~e |    1.01848   .0158662     1.18   0.240     .9878527    1.050057
       Asian |   1.343886   1.945893     0.20   0.838     .0786786    22.95451
       Black |   .9015496   .4290747    -0.22   0.828      .354713    2.291407
      Latino |    1.46675   .3669856     1.53   0.126     .8982202    2.395132
       Other |    .325446   .3746248    -0.98   0.329     .0340919    3.106756
   AsianMale |  (omitted)
   BlackMale |   1.490521   1.319103     0.45   0.652     .2630449    8.445911
  LatinoMale |   .7698462   .2849485    -0.71   0.480     .3726858    1.590249
   OtherMale |   2.17e-06   .0018656    -0.02   0.988            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9905053   .0149533    -0.63   0.527     .9616268    1.020251
       exper |   1.135564   .0243796     5.92   0.000     1.088772    1.184367
        male |   .6590083   .2461652    -1.12   0.264     .3169086    1.370401
         age |   .9742815   .0167933    -1.51   0.131      .941917    1.007758
pyacctrati~2 |   1.600409   .2868003     2.62   0.009     1.126398    2.273893
pyperstudlep |   1.012239   .0070898     1.74   0.082     .9984378     1.02623
pyperstude~s |   1.010443    .011975     0.88   0.381     .9872425    1.034188
pyperstudw~e |   .9282262   .1061985    -0.65   0.515     .7417673    1.161555
pyperstudb~k |   .9231059   .1060515    -0.70   0.486     .7369887    1.156225
pyperstudl~o |   .9141924   .0952537    -0.86   0.389     .7453276    1.121316
pyperstudm~e |    1.02299   .0183552     1.27   0.205     .9876397    1.059606
       Asian |   1.52e-06   .0020469    -0.01   0.992            0           .
       Black |   .3565463   .2528791    -1.45   0.146     .0887983    1.431619
      Latino |   .9422665   .2648923    -0.21   0.832     .5431026    1.634804
       Other |   5.00e-07   .0004068    -0.02   0.986            0           .
   AsianMale |  (omitted)
   BlackMale |    2.75569   3.765742     0.74   0.458     .1892497    40.12597
  LatinoMale |   2.083474   .9235763     1.66   0.098        .8739    4.967231
```

```
   OtherMale |    6609796   5.37e+09     0.02   0.985           0           .
------------------------------------------------------------------------------


---------->  region = 20

Iteration 0:   log likelihood =  -2195.347
Iteration 1:   log likelihood = -2097.3114
Iteration 2:   log likelihood = -2094.2368
Iteration 3:   log likelihood = -2094.1391
Iteration 4:   log likelihood = -2094.1173
Iteration 5:   log likelihood = -2094.1121
Iteration 6:   log likelihood = -2094.1111
Iteration 7:   log likelihood = -2094.1109
Iteration 8:   log likelihood = -2094.1108

Multinomial logistic regression                 Number of obs   =       2112
                                                LR chi2(38)     =     202.47
                                                Prob > chi2     =     0.0000
Log likelihood = -2094.1108                     Pseudo R2       =     0.0461

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9932013   .0079503    -0.85   0.394     .9777405    1.008907
       exper |    1.00777   .0103276     0.76   0.450     .9877302    1.028216
        male |   1.066399   .1649887     0.42   0.678     .7874545    1.444156
         age |   .9853498   .0083251    -1.75   0.081     .9691672    1.001803
pyacctrati~2 |   .9728388   .0882124    -0.30   0.761     .8144379    1.162047
pyperstudlep |    .987079   .0066345    -1.93   0.053     .9741608    1.000168
pyperstude~s |    1.00442   .0055167     0.80   0.422     .9936656    1.015291
pyperstudw~e |   1.001014    .029894     0.03   0.973     .9441043    1.061353
pyperstudb~k |   .9894981    .032847    -0.32   0.750     .9271688    1.056017
pyperstudl~o |    .995141   .0308298    -0.16   0.875     .9365137    1.057438
pyperstudm~e |   1.003136   .0077778     0.40   0.686     .9880076    1.018497
       Asian |   .6935113   .8063704    -0.31   0.753     .0710119     6.77292
       Black |   1.487098   .4385331     1.35   0.178     .8343091    2.650647
      Latino |   1.196493   .1719941     1.25   0.212     .9027159    1.585875
       Other |   .6852935   .4702639    -0.55   0.582     .1785512     2.63021
   AsianMale |    1545701   8.37e+08     0.03   0.979           0           .
   BlackMale |   1.651078   .7571103     1.09   0.274      .672117     4.05593
  LatinoMale |   1.464339   .3318792     1.68   0.092     .9391272    2.283278
   OtherMale |   .4361207   .5615104    -0.64   0.519     .0349683    5.439244
-------------+----------------------------------------------------------------
3            |
      tenure |   1.009312   .0082254     1.14   0.255     .9933184    1.025563
       exper |   1.076989   .0137614     5.80   0.000     1.050352    1.104301
        male |   1.285961   .2207906     1.46   0.143     .9185067    1.800417
         age |   .9616305   .0107782    -3.49   0.000     .9407359    .9829891
pyacctrati~2 |   1.275556   .1255366     2.47   0.013     1.051784    1.546936
pyperstudlep |   1.012546   .0062073     2.03   0.042     1.000453    1.024786
pyperstude~s |   1.027896   .0063581     4.45   0.000     1.015509    1.040433
pyperstudw~e |   1.004027   .0324644     0.12   0.901     .9423726    1.069716
pyperstudb~k |   .9820763   .0350173    -0.51   0.612     .9157869    1.053164
pyperstudl~o |   .9797151   .0328075    -0.61   0.541     .9174783    1.046174
pyperstudm~e |   .9956421   .0093271    -0.47   0.641     .9775282    1.014092
       Asian |   1.299841    1.21511     0.28   0.779     .2080535    8.120923
       Black |   1.613585   .4981572     1.55   0.121      .881055    2.955158
      Latino |   .7974922   .1307546    -1.38   0.168     .5783168    1.099732
       Other |   .3752089   .4027538    -0.91   0.361     .0457702    3.075837
   AsianMale |   519298.8   2.81e+08     0.02   0.981           0           .
   BlackMale |    1.03421   .5490276     0.06   0.949     .3653711    2.927408
  LatinoMale |    1.21408     .31924     0.74   0.461     .7251458     2.03268
   OtherMale |   1.016319   1.569728     0.01   0.992     .0492414    20.97635
```

---

by pyschooltype:

```
. bysort pyschooltype : mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian
Black Latino
>  Other AsianMale BlackMale LatinoMale OtherMale if validcert2009a==1, rrr iter(20)


---------->  pyschooltype =
no observations


---------->  pyschooltype = B

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood =  -388.2121
Iteration 1:   log likelihood = -350.51408
Iteration 2:   log likelihood =  -344.5998
Iteration 3:   log likelihood = -340.71804
Iteration 4:   log likelihood = -339.56129
Iteration 5:   log likelihood = -338.38926
Iteration 6:   log likelihood = -338.38383
Iteration 7:   log likelihood =  -338.3831
Iteration 8:   log likelihood = -338.38296
Iteration 9:   log likelihood = -338.38293
Iteration 10:  log likelihood = -338.38293

Multinomial logistic regression                 Number of obs   =        426
                                                LR chi2(34)     =      99.66
                                                Prob > chi2     =     0.0000
Log likelihood = -338.38293                     Pseudo R2       =     0.1284

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.019621   .0283824     0.70   0.485     .9654828    1.076795
       exper |   1.006709   .0375499     0.18   0.858     .9357388    1.083063
        male |   1.028254   .4609402     0.06   0.950     .4270989    2.475555
         age |   .9504232   .0300136    -1.61   0.107     .8933811    1.011107
pyacctrati~2 |   .7557543   .2194753    -0.96   0.335     .4277469    1.335286
pyperstudlep |    1.02388   .0217508     1.11   0.267      .982125    1.067411
pyperstude~s |   .9762229   .0138872    -1.69   0.091     .9493804    1.003824
pyperstudw~e |   .9804513   .0294589    -0.66   0.511     .9243802    1.039924
pyperstudb~k |   1.026689   .0345585     0.78   0.434     .9611415    1.096707
pyperstudl~o |   1.010766   .0329551     0.33   0.743     .9481961    1.077466
pyperstudm~e |   1.004076   .0130622     0.31   0.755     .9787984    1.030007
       Asian |   .7906221   2742.798    -0.00   1.000            0           .
       Black |   1.673662   1.267592     0.68   0.497     .3793043    7.384952
      Latino |    1.20513   1.118855     0.20   0.841     .1953306    7.435288
       Other |   6.545215   22706.42     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   2.591456   2.943339     0.84   0.402      .279744    24.00638
  LatinoMale |   3.330061   3.842982     1.04   0.297     .3468504    31.97143
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9703576   .0173884    -1.68   0.093     .9368685    1.005044
       exper |   .9738492   .0181341    -1.42   0.155     .9389477    1.010048
        male |   1.255472   .3203243     0.89   0.373     .7614285    2.070068
         age |   1.026835   .0173262     1.57   0.117     .9934316    1.061361
pyacctrati~2 |   .7917743   .1466015    -1.26   0.207     .5508034    1.138167
```

```
pyperstudlep |    .983783   .0178835    -0.90   0.368      .949349    1.019466
pyperstude~s |   1.015339   .0096565     1.60   0.109     .9965877    1.034443
pyperstudw~e |   1.010073   .0300925     0.34   0.737     .9527822     1.07081
pyperstudb~k |   .9969848    .032601    -0.09   0.926     .9350925    1.062974
pyperstudl~o |   1.010058   .0309336     0.33   0.744     .9512131    1.072543
pyperstudm~e |   .9566902   .0173347    -2.44   0.015     .9233111     .991276
       Asian |    1392976   1.91e+09     0.01   0.992            0           .
       Black |   .4709076   .5387946    -0.66   0.510     .0500061    4.434535
      Latino |   .8083231   .7090089    -0.24   0.808     .1448658    4.510286
       Other |   933523.5   1.28e+09     0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |   9.464802   12.84566     1.66   0.098     .6620005    135.3209
  LatinoMale |   4.536561   4.803206     1.43   0.153     .5695008    36.13759
   OtherMale |  (omitted)
-------------------------------------------------------------------------------


--------->  pyschooltype = E

Iteration 0:   log likelihood = -12214.373
Iteration 1:   log likelihood = -11582.932
Iteration 2:   log likelihood = -11577.177
Iteration 3:   log likelihood = -11577.173
Iteration 4:   log likelihood = -11577.173

Multinomial logistic regression                 Number of obs   =      11232
                                                LR chi2(38)     =    1274.40
                                                Prob > chi2     =     0.0000
Log likelihood = -11577.173                     Pseudo R2       =     0.0522

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.014929   .0041721     3.60   0.000     1.006785    1.023139
       exper |   1.007191   .0051486     1.40   0.161     .9971504    1.017333
        male |   1.650231   .1403344     5.89   0.000      1.39688    1.949531
         age |   .9845499   .0037993    -4.03   0.000     .9771314    .9920246
pyacctrati~2 |   .9005668   .0334577    -2.82   0.005     .8373215    .9685893
pyperstudlep |    1.00593   .0017161     3.47   0.001     1.002572    1.009299
pyperstude~s |   .9918013   .0020723    -3.94   0.000      .987748    .9958712
pyperstudw~e |   .9972148    .004889    -0.57   0.569     .9876783    1.006843
pyperstudb~k |   .9953096    .005631    -0.83   0.406      .984334    1.006408
pyperstudl~o |   .9986714   .0051874    -0.26   0.798     .9885559     1.00889
pyperstudm~e |   1.006732   .0037691     1.79   0.073     .9993716    1.014147
       Asian |   .6163851   .2350086    -1.27   0.204     .2919546    1.301335
       Black |   .9600183   .0874684    -0.45   0.654     .8030185    1.147713
      Latino |   1.129946   .0821768     1.68   0.093     .9798345    1.303054
       Other |   1.719171   .4514358     2.06   0.039      1.02755    2.876308
   AsianMale |   1.478484   1.100146     0.53   0.599     .3439016    6.356221
   BlackMale |   1.156593     .22986     0.73   0.464     .7834543    1.707448
  LatinoMale |   .6361956   .0889704    -3.23   0.001     .4836733    .8368144
   OtherMale |   .3388777   .2324761    -1.58   0.115     .0883291    1.300116
-------------+----------------------------------------------------------------
3            |
      tenure |   1.019577   .0036489     5.42   0.000      1.01245    1.026753
       exper |   1.067441   .0052392    13.30   0.000     1.057222    1.077759
        male |   2.436892   .1918985    11.31   0.000     2.088366    2.843584
         age |   .9889676   .0039478    -2.78   0.005     .9812602    .9967355
pyacctrati~2 |   .9338645   .0344291    -1.86   0.063     .8687649    1.003842
pyperstudlep |   .9978068   .0016845    -1.30   0.193     .9945108    1.001114
pyperstude~s |   1.005796   .0020258     2.87   0.004     1.001833    1.009774
pyperstudw~e |   .9990338   .0049428    -0.20   0.845     .9893929    1.008769
pyperstudb~k |   .9868013   .0056207    -2.33   0.020     .9758461    .9978794
pyperstudl~o |   .9916723   .0052005    -1.59   0.111     .9815317    1.001918
```

```
pyperstudm~e |   .9979339   .0038429    -0.54   0.591     .9904302    1.005494
       Asian |   1.028433   .3728122     0.08   0.938      .505372    2.092864
       Black |   .9100143    .084273    -1.02   0.309     .7589648    1.091126
      Latino |   1.040423   .0768069     0.54   0.591     .9002678    1.202397
       Other |   1.260086   .3749453     0.78   0.437     .7032676     2.25777
   AsianMale |     .93157   .6743865    -0.10   0.922     .2254289    3.849651
   BlackMale |   .7408043    .151796    -1.46   0.143      .495777    1.106931
  LatinoMale |   .5477641   .0748909    -4.40   0.000     .4190023    .7160951
   OtherMale |   .5304616   .3471271    -0.97   0.333     .1471089    1.912798
------------------------------------------------------------------------------


---------> pyschooltype = M

Iteration 0:   log likelihood = -6653.1301
Iteration 1:   log likelihood = -6351.1693
Iteration 2:   log likelihood = -6343.4012
Iteration 3:   log likelihood = -6343.3732
Iteration 4:   log likelihood = -6343.3732

Multinomial logistic regression                 Number of obs   =       6328
                                                LR chi2(38)     =     619.51
                                                Prob > chi2     =     0.0000
Log likelihood = -6343.3732                     Pseudo R2       =     0.0466

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.006389   .0048969     1.31   0.191     .9968363    1.016032
       exper |   1.010316   .0058797     1.76   0.078     .9988571    1.021906
        male |    1.42539   .1083869     4.66   0.000     1.228028    1.654471
         age |   .9810601   .0044927    -4.18   0.000      .972294    .9899053
pyacctrati~2 |   .8960229   .0488177    -2.02   0.044     .8052735    .9969992
pyperstudlep |   1.005463    .003472     1.58   0.115      .998681    1.012291
pyperstude~s |   .9971942   .0027461    -1.02   0.308     .9918265    1.002591
pyperstudw~e |   .9897835   .0066366    -1.53   0.126     .9768611    1.002877
pyperstudb~k |   .9902353   .0076168    -1.28   0.202     .9754187    1.005277
pyperstudl~o |   .9907754   .0072208    -1.27   0.204     .9767234     1.00503
pyperstudm~e |     1.0087    .004663     1.87   0.061     .9996019    1.017881
       Asian |   .7684503   .3330094    -0.61   0.543     .3286593    1.796742
       Black |   1.098919   .1164164     0.89   0.373     .8928774    1.352507
      Latino |   1.628005   .1818767     4.36   0.000     1.307861    2.026515
       Other |   .6777485   .2342956    -1.13   0.261     .3441999    1.334524
   AsianMale |   2.365014   1.620859     1.26   0.209     .6172541    9.061573
   BlackMale |   1.334208   .2226508     1.73   0.084     .9620028    1.850423
  LatinoMale |   1.121493   .1729982     0.74   0.457     .8288816    1.517401
   OtherMale |   2.022895   1.054559     1.35   0.177     .7281687    5.619719
-------------+----------------------------------------------------------------
3            |
      tenure |    1.00903   .0051562     1.76   0.079     .9989745    1.019187
       exper |   1.087107   .0080688    11.25   0.000     1.071407    1.103037
        male |   2.101466   .1809032     8.63   0.000       1.7752    2.487697
         age |   .9527239   .0061747    -7.47   0.000     .9406982    .9649034
pyacctrati~2 |   1.036024   .0661924     0.55   0.580     .9140837    1.174232
pyperstudlep |   .9890593   .0046037    -2.36   0.018     .9800772    .9981237
pyperstude~s |   1.013345   .0033066     4.06   0.000     1.006885    1.019847
pyperstudw~e |   1.011074   .0091504     1.22   0.224     .9932981    1.029169
pyperstudb~k |   .9955154    .010287    -0.43   0.664      .975556    1.015883
pyperstudl~o |   .9981279   .0097347    -0.19   0.848     .9792295    1.017391
pyperstudm~e |   1.003002   .0058114     0.52   0.605     .9916766    1.014457
       Asian |   .8705448   .4941354    -0.24   0.807     .2861774    2.648177
       Black |   .8220705   .1216414    -1.32   0.185     .6151162    1.098654
      Latino |   1.461078   .2083456     2.66   0.008     1.104827    1.932201
       Other |   .8810271   .3811661    -0.29   0.770     .3773348    2.057083
```

```
   AsianMale |   .7724163   .7731664    -0.26   0.796     .1085984    5.493885
   BlackMale |   1.506797   .3187299     1.94   0.053     .9954093    2.280908
  LatinoMale |    1.05734   .1957357     0.30   0.763     .7355961    1.519812
   OtherMale |   1.093873   .6956587     0.14   0.888     .3145121     3.80449
------------------------------------------------------------------------------


---------->  pyschooltype = S

Iteration 0:   log likelihood = -7454.0579
Iteration 1:   log likelihood = -7164.8277
Iteration 2:   log likelihood = -7156.2983
Iteration 3:   log likelihood = -7156.2504
Iteration 4:   log likelihood = -7156.2504

Multinomial logistic regression                 Number of obs   =       7771
                                                LR chi2(38)     =     595.61
                                                Prob > chi2     =     0.0000
Log likelihood = -7156.2504                     Pseudo R2       =     0.0400

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.007531   .0037738     2.00   0.045     1.000162    1.014955
       exper |   1.008618   .0047476     1.82   0.068     .9993553    1.017966
        male |   1.078635   .0687885     1.19   0.235     .9518981    1.222247
         age |   .9760384   .0039112    -6.05   0.000     .9684027    .9837344
pyacctrati~2 |   .8748577   .0531139    -2.20   0.028     .7767116    .9854058
pyperstudlep |   1.023382   .0045062     5.25   0.000     1.014588    1.032252
pyperstude~s |   .9899968   .0021962    -4.53   0.000     .9857017    .9943106
pyperstudw~e |   .9945133   .0060561    -0.90   0.366     .9827141    1.006454
pyperstudb~k |   .9966903   .0068225    -0.48   0.628     .9834077    1.010152
pyperstudl~o |   .9948891   .0064577    -0.79   0.430     .9823125    1.007627
pyperstudm~e |   1.003528   .0034299     1.03   0.303      .996828    1.010273
       Asian |   1.315584   .5554916     0.65   0.516     .5750523    3.009744
       Black |   1.423309    .148681     3.38   0.001     1.159795    1.746695
      Latino |   1.917507   .2021353     6.18   0.000     1.559578    2.357583
       Other |   .9790021   .3381076    -0.06   0.951     .4975229    1.926434
   AsianMale |   .6784899   .4799702    -0.55   0.583     .1695881     2.71451
   BlackMale |   1.849547   .2748444     4.14   0.000     1.382216    2.474883
  LatinoMale |   1.141525   .1533203     0.99   0.324     .8773219    1.485292
   OtherMale |   .8577859    .433475    -0.30   0.761     .3185894    2.309545
-------------+----------------------------------------------------------------
3            |
      tenure |    .998723   .0047635    -0.27   0.789     .9894301    1.008103
       exper |   1.057142   .0074626     7.87   0.000     1.042616     1.07187
        male |   1.995606   .1843932     7.48   0.000     1.665038    2.391803
         age |   .9684398   .0063111    -4.92   0.000     .9561489    .9808887
pyacctrati~2 |   1.128234   .0925206     1.47   0.141     .9607195    1.324957
pyperstudlep |   .9895841   .0073392    -1.41   0.158     .9753035    1.004074
pyperstude~s |   1.012709   .0030475     4.20   0.000     1.006753    1.018699
pyperstudw~e |   1.026795   .0110274     2.46   0.014     1.005408    1.048638
pyperstudb~k |   1.015335    .012036     1.28   0.199     .9920167    1.039201
pyperstudl~o |   1.015156   .0114225     1.34   0.181     .9930139    1.037793
pyperstudm~e |   .9928796   .0056998    -1.24   0.213     .9817709    1.004114
       Asian |   .5990517   .6255671    -0.49   0.624     .0773725     4.63812
       Black |   .9440826   .1912767    -0.28   0.776     .6346752    1.404328
      Latino |   1.619101   .2790015     2.80   0.005     1.155037    2.269614
       Other |   .6271933   .4641152    -0.63   0.528     .1470696     2.67473
   AsianMale |   .9503194   1.416015    -0.03   0.973     .0512324    17.62765
   BlackMale |    1.53331    .391889     1.67   0.094     .9291306    2.530365
  LatinoMale |   .7848308   .1617487    -1.18   0.240     .5240211    1.175448
   OtherMale |   2.487871   2.076035     1.09   0.275     .4847661    12.76802
------------------------------------------------------------------------------
```

2009-10

```
. mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian Black Latino Other
AsianMale Black
> Male LatinoMale OtherMale if validcert2010a==1, rrr iter(20)

Iteration 0:   log likelihood = -28524.928
Iteration 1:   log likelihood = -27223.492
Iteration 2:   log likelihood = -27193.717
Iteration 3:   log likelihood = -27193.655
Iteration 4:   log likelihood = -27193.655

Multinomial logistic regression                 Number of obs   =      27019
                                                LR chi2(38)     =    2662.55
                                                Prob > chi2     =     0.0000
Log likelihood = -27193.655                     Pseudo R2       =     0.0467

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |     1.0115   .0024003     4.82   0.000     1.006806    1.016215
       exper |   1.016564   .0029838     5.60   0.000     1.010733    1.022429
        male |   1.173072   .0460167     4.07   0.000     1.086261    1.266821
         age |   .9780635   .0022937    -9.46   0.000     .9735782    .9825693
pyacctrati~2 |   .9465964   .0185541    -2.80   0.005     .9109206    .9836693
pyperstudlep |    1.00469   .0011471     4.10   0.000     1.002445    1.006941
pyperstude~s |   .9932212   .0012139    -5.57   0.000     .9908449    .9956032
pyperstudw~e |   .9930673   .0028905    -2.39   0.017     .9874183    .9987487
pyperstudb~k |    .995728   .0033473    -1.27   0.203      .989189     1.00231
pyperstudl~o |   .9974023    .003118    -0.83   0.405     .9913099    1.003532
pyperstudm~e |   1.003337   .0021545     1.55   0.121     .9991228    1.007568
       Asian |    .922873   .1989886    -0.37   0.710     .6047935     1.40824
       Black |   1.137561    .062369     2.35   0.019     1.021659    1.266612
      Latino |   1.371203   .0690047     6.27   0.000     1.242412    1.513344
       Other |   .9028993   .1559034    -0.59   0.554     .6436689    1.266532
   AsianMale |   .8219976   .3019733    -0.53   0.594     .4001002    1.688777
   BlackMale |   1.598778   .1444119     5.19   0.000     1.339375    1.908421
  LatinoMale |   1.164392   .0877757     2.02   0.043     1.004461    1.349789
   OtherMale |   1.055324   .3046223     0.19   0.852     .5993545    1.858179
-------------+----------------------------------------------------------------
3            |
      tenure |    1.01484   .0023635     6.33   0.000     1.010219    1.019483
       exper |   1.072785   .0035728    21.10   0.000     1.065806    1.079811
        male |   1.402379   .0585598     8.10   0.000     1.292175    1.521982
         age |   .9732214   .0027907    -9.47   0.000      .967767    .9787065
pyacctrati~2 |   1.358989    .029812    13.98   0.000     1.301797    1.418694
pyperstudlep |   1.008145   .0012544     6.52   0.000     1.005689    1.010607
pyperstude~s |   1.016274   .0013542    12.12   0.000     1.013623    1.018932
pyperstudw~e |   1.010214   .0035422     2.90   0.004     1.003296    1.017181
pyperstudb~k |   .9973405   .0040323    -0.66   0.510     .9894686    1.005275
pyperstudl~o |   .9956069   .0037289    -1.18   0.240     .9883251    1.002942
pyperstudm~e |   .9944904   .0025416    -2.16   0.031     .9895214    .9994843
       Asian |   .7846258   .2118488    -0.90   0.369      .462209    1.331947
       Black |   .8204675   .0551452    -2.94   0.003     .7192013    .9359923
      Latino |   1.103263   .0633502     1.71   0.087     .9858307    1.234684
       Other |   .8797684   .1753112    -0.64   0.520     .5953189    1.300131
   AsianMale |    .791968   .3725111    -0.50   0.620      .315018     1.99104
   BlackMale |   1.382321   .1557905     2.87   0.004     1.108349    1.724015
  LatinoMale |   1.015896    .088318     0.18   0.856       .85674    1.204618
   OtherMale |   1.162046   .3724128     0.47   0.639     .6200549    2.177793
------------------------------------------------------------------------------
```

```
. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=27019)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     46.452    2    0.000
       exper |    480.511    2    0.000
        male |     67.351    2    0.000
         age |    142.528    2    0.000
pyacctrati~2 |    265.360    2    0.000
pyperstudlep |     45.540    2    0.000
pyperstude~s |    256.820    2    0.000
pyperstudw~e |     21.921    2    0.000
pyperstudb~k |      1.677    2    0.432
pyperstudl~o |      1.584    2    0.453
pyperstudm~e |     10.799    2    0.005
       Asian |      0.848    2    0.654
       Black |     20.722    2    0.000
      Latino |     39.533    2    0.000
       Other |      0.598    2    0.741
   AsianMale |      0.423    2    0.810
   BlackMale |     28.230    2    0.000
  LatinoMale |      4.526    2    0.104
   OtherMale |      0.221    2    0.895
-----------------------------------------

**** Wald tests for independent variables (N=27019)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     46.389    2    0.000
       exper |    446.114    2    0.000
        male |     67.430    2    0.000
         age |    139.854    2    0.000
pyacctrati~2 |    261.599    2    0.000
pyperstudlep |     45.372    2    0.000
pyperstude~s |    252.532    2    0.000
pyperstudw~e |     21.538    2    0.000
pyperstudb~k |      1.678    2    0.432
pyperstudl~o |      1.586    2    0.452
pyperstudm~e |     10.607    2    0.005
       Asian |      0.822    2    0.663
       Black |     20.511    2    0.000
      Latino |     39.706    2    0.000
       Other |      0.596    2    0.742
   AsianMale |      0.421    2    0.810
   BlackMale |     27.991    2    0.000
  LatinoMale |      4.530    2    0.104
   OtherMale |      0.221    2    0.895
-----------------------------------------

**** Hausman tests of IIA assumption (N=27019)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+----------------------------------
       2 |   -79.051   20     ---    ---
       3 |     3.864   19    1.000   for Ho
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.
```

```
**** Small-Hsiao tests of IIA assumption (N=27019)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+--------------------------------------------------------
       2 |  -5578.609  -5571.443  14.333   20    0.813   for Ho
       3 |  -6775.905  -6770.166  11.478   20    0.933   for Ho
-------------------------------------------------------------------

**** Wald tests for combining alternatives (N=27019)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1550.592   19    0.000
       2-       1  |  431.759   19    0.000
       3-       1  | 1797.253   19    0.000
-----------------------------------------

**** LR tests for combining alternatives (N=27019)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1711.204   19    0.000
       2-       1  |  442.337   19    0.000
       3-       1  | 2006.578   19    0.000
-----------------------------------------

by region:


. bysort region: mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian
Black Latino Other
> AsianMale BlackMale LatinoMale OtherMale if validcert2010a==1, rrr iter(20)


---------->  region = 1

note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -2064.9562
Iteration 1:   log likelihood = -1956.6008
Iteration 2:   log likelihood = -1952.1061
Iteration 3:   log likelihood = -1951.7462
Iteration 4:   log likelihood = -1951.6823
Iteration 5:   log likelihood = -1951.6761
Iteration 6:   log likelihood = -1951.6747
Iteration 7:   log likelihood = -1951.6744
Iteration 8:   log likelihood = -1951.6744

Multinomial logistic regression                 Number of obs   =       1926
                                                LR chi2(36)     =     226.56
                                                Prob > chi2     =     0.0000
Log likelihood = -1951.6744                     Pseudo R2       =     0.0549

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
```

```
2            |
      tenure |   1.020178   .0088362     2.31   0.021     1.003006    1.037645
       exper |   1.003629   .0115474     0.31   0.753     .9812498    1.026519
        male |   .6063288   .2024218    -1.50   0.134     .3151636    1.166488
         age |   .9735791   .0094297    -2.76   0.006     .9552715    .9922376
pyacctrati~2 |   .8927229   .0681759    -1.49   0.137     .7686199    1.036864
pyperstudlep |   1.001243   .0026955     0.46   0.644     .9959741     1.00654
pyperstude~s |   .9993828   .0053023    -0.12   0.907     .9890443    1.009829
pyperstudw~e |   .9315509   .0656245    -1.01   0.314     .8114139    1.069475
pyperstudb~k |    .981266   .0745099    -0.25   0.803     .8455766    1.138729
pyperstudl~o |   .9714419   .0564377    -0.50   0.618     .8668915    1.088602
pyperstudm~e |   .9975814   .0084615    -0.29   0.775     .9811343    1.014304
       Asian |   .6227006   .5586965    -0.53   0.598     .1072922    3.614018
       Black |   .5348857    .636266    -0.53   0.599     .0519668    5.505494
      Latino |   1.137387    .245378     0.60   0.551      .745198    1.735982
       Other |   .5361867   .4646108    -0.72   0.472     .0981165    2.930151
   AsianMale |   1.70e-06   .0029924    -0.01   0.994            0           .
   BlackMale |   9.263644   13.91493     1.48   0.138     .4877435    175.9431
  LatinoMale |   2.060234   .7294097     2.04   0.041     1.029332    4.123612
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.028363   .0093094     3.09   0.002     1.010278    1.046772
       exper |   1.099836   .0173498     6.03   0.000     1.066352    1.134372
        male |   .6009191   .2120819    -1.44   0.149     .3008861    1.200134
         age |    .930622   .0134112    -4.99   0.000     .9047043    .9572821
pyacctrati~2 |    1.18758   .1055338     1.93   0.053      .997749    1.413529
pyperstudlep |     1.0154   .0031545     4.92   0.000     1.009236    1.021601
pyperstude~s |   1.000355   .0062495     0.06   0.955     .9881812    1.012679
pyperstudw~e |   .9991923    .078672    -0.01   0.992     .8563065     1.16592
pyperstudb~k |   1.019559   .0974196     0.20   0.839     .8454333    1.229547
pyperstudl~o |   .9970892   .0644246    -0.05   0.964     .8784874    1.131703
pyperstudm~e |   .9858531   .0107972    -1.30   0.193     .9649164    1.007244
       Asian |   9.52e-07   .0006161    -0.02   0.983            0           .
       Black |   7.38e-07   .0006366    -0.02   0.987            0           .
      Latino |   .6551021   .1460192    -1.90   0.058     .4232336       1.014
       Other |   .1952572   .2236122    -1.43   0.154     .0206916    1.842549
   AsianMale |   12.53564   28733.08     0.00   0.999            0           .
   BlackMale |   7.880116   8650.721     0.00   0.998            0           .
  LatinoMale |   2.261391   .8610813     2.14   0.032     1.072159     4.76971
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 2

Iteration 0:   log likelihood = -753.73606
Iteration 1:   log likelihood = -716.66905
Iteration 2:   log likelihood = -715.40688
Iteration 3:   log likelihood = -715.25866
Iteration 4:   log likelihood = -715.23887
Iteration 5:   log likelihood = -715.23647
Iteration 6:   log likelihood = -715.23601
Iteration 7:   log likelihood = -715.23591
Iteration 8:   log likelihood = -715.23589

Multinomial logistic regression                 Number of obs   =        730
                                                LR chi2(38)     =      77.00
                                                Prob > chi2     =     0.0002
Log likelihood = -715.23589                     Pseudo R2       =     0.0511

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
```

```
      tenure |   1.011474   .0158411     0.73   0.466     .9808976    1.043003
       exper |   .9965449   .0186272    -0.19   0.853      .960697    1.033731
        male |   1.246856    .352518     0.78   0.435     .7164075    2.170065
         age |    .986294   .0139697    -0.97   0.330     .9592904    1.014058
pyacctrati~2 |   1.012802   .1426651     0.09   0.928     .7684629    1.334832
pyperstudlep |   1.021031   .0250932     0.85   0.397     .9730155    1.071417
pyperstude~s |   1.002256   .0084179     0.27   0.788     .9858927    1.018892
pyperstudw~e |   .9255787   .0672693    -1.06   0.287     .8026933    1.067277
pyperstudb~k |   .9156989   .0793695    -1.02   0.310     .7726336    1.085255
pyperstudl~o |   .9307904    .065684    -1.02   0.309     .8105584    1.068857
pyperstudm~e |   .9860736   .0173304    -0.80   0.425     .9526851    1.020632
       Asian |    8428955   1.68e+10     0.01   0.994            0           .
       Black |   .9813996   .8832151    -0.02   0.983     .1681911    5.726492
      Latino |   .7851537   .2046531    -0.93   0.353     .4710706     1.30865
       Other |   1.949428   1.998758     0.65   0.515     .2613161     14.5428
   AsianMale |   1.16e-13   2.88e-10    -0.01   0.990            0           .
   BlackMale |   .6542348   .9621911    -0.29   0.773      .036632    11.68439
  LatinoMale |   1.524455   .6017706     1.07   0.285     .7032458    3.304623
   OtherMale |   3.90e-07   .0003394    -0.02   0.986            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.011288   .0144211     0.79   0.431     .9834149    1.039952
       exper |   1.023974   .0187769     1.29   0.196     .9878255    1.061445
        male |   .6471191    .211205    -1.33   0.182     .3413276    1.226866
         age |   1.004868   .0148666     0.33   0.743     .9761486    1.034433
pyacctrati~2 |   1.431017   .1972141     2.60   0.009     1.092289    1.874789
pyperstudlep |   1.023779   .0236994     1.02   0.310     .9783669    1.071299
pyperstude~s |   1.006717   .0086043     0.78   0.433     .9899931    1.023723
pyperstudw~e |   1.096984    .083469     1.22   0.224     .9450021    1.273409
pyperstudb~k |   1.084514   .1004314     0.88   0.381     .9045025    1.300351
pyperstudl~o |    1.09765    .081464     1.26   0.209     .9490526    1.269513
pyperstudm~e |   .9442643   .0180047    -3.01   0.003     .9096271    .9802205
       Asian |   1.694603   5843.894     0.00   1.000            0           .
       Black |   2.989837   2.352501     1.39   0.164     .6395793    13.97657
      Latino |   1.045884   .2619982     0.18   0.858     .6401097    1.708886
       Other |   .8824054   1.107045    -0.10   0.921     .0754694    10.31728
   AsianMale |   1.20e-06    .004495    -0.00   0.997            0           .
   BlackMale |   .5493516   .7831979    -0.42   0.674     .0335979    8.982326
  LatinoMale |   2.163431   .9253727     1.80   0.071      .935525    5.003003
   OtherMale |   4.04e-06   .0032545    -0.02   0.988            0           .
------------------------------------------------------------------------------


---------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -355.32467
Iteration 1:   log likelihood = -306.89744
Iteration 2:   log likelihood = -304.79014
Iteration 3:   log likelihood = -304.68829
Iteration 4:   log likelihood = -304.67598
Iteration 5:   log likelihood = -304.67371
Iteration 6:   log likelihood = -304.67348
Iteration 7:   log likelihood = -304.67343
Iteration 8:   log likelihood = -304.67342

Multinomial logistic regression                 Number of obs   =        333
                                                LR chi2(32)     =     101.30
                                                Prob > chi2     =     0.0000
Log likelihood = -304.67342                     Pseudo R2       =     0.1425

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
```

```
-------------+----------------------------------------------------------------
2            |
      tenure |   1.021702   .0243096     0.90   0.367     .9751501    1.070477
       exper |   .9547492   .0271957    -1.63   0.104     .9029073    1.009568
        male |   1.324841   .4668175     0.80   0.425     .6641046    2.642962
         age |   .9940622   .0235175    -0.25   0.801     .9490211    1.041241
pyacctrati~2 |   .8190218    .171085    -0.96   0.339     .5438616    1.233396
pyperstudlep |   1.025801   .0267749     0.98   0.329     .9746429    1.079644
pyperstude~s |   .9879251   .0191564    -0.63   0.531     .9510838    1.026193
pyperstudw~e |   .8947304   .0474935    -2.10   0.036     .8063235    .9928305
pyperstudb~k |   .9707077    .053138    -0.54   0.587     .8719516    1.080649
pyperstudl~o |    .926542   .0525701    -1.34   0.179     .8290289    1.035525
pyperstudm~e |    .997858    .013707    -0.16   0.876     .9713511    1.025088
       Asian |  (omitted)
       Black |   1.441684    1.01891     0.52   0.605      .360814    5.760455
      Latino |   .9945869   .6591522    -0.01   0.993     .2713424     3.64559
       Other |   2.196872   3.293405     0.52   0.600     .1163428    41.48297
   AsianMale |  (omitted)
   BlackMale |   .7864826   1.267381    -0.15   0.882     .0334208    18.50809
  LatinoMale |   .3670222   .4102145    -0.90   0.370     .0410506     3.28145
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.009541   .0192034     0.50   0.618     .9725955    1.047889
       exper |   1.009279   .0250823     0.37   0.710      .961297    1.059657
        male |   1.902112    .643219     1.90   0.057     .9803775    3.690445
         age |   1.041216   .0231753     1.81   0.070     .9967692    1.087644
pyacctrati~2 |   1.309278   .2552031     1.38   0.167     .8935455    1.918436
pyperstudlep |    1.01458   .0245865     0.60   0.550      .967518    1.063932
pyperstude~s |   1.076161   .0193391     4.08   0.000     1.038917     1.11474
pyperstudw~e |   1.078223   .0652317     1.24   0.213     .9576606    1.213964
pyperstudb~k |   1.068801   .0662598     1.07   0.283     .9465135    1.206887
pyperstudl~o |   1.041629   .0660507     0.64   0.520     .9198934    1.179474
pyperstudm~e |   .9487914   .0283914    -1.76   0.079     .8947456    1.006102
       Asian |  (omitted)
       Black |   .8046679   .6346628    -0.28   0.783     .1714951    3.775563
      Latino |   1.849137   1.189116     0.96   0.339     .5243132    6.521496
       Other |   4.37e-06   .0027456    -0.02   0.984            0           .
   AsianMale |  (omitted)
   BlackMale |   6.463895    9.41171     1.28   0.200     .3724844     112.171
  LatinoMale |    .449914   .4471177    -0.80   0.422     .0641532      3.1553
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 4

Iteration 0:   log likelihood = -5934.5421
Iteration 1:   log likelihood = -5548.3683
Iteration 2:   log likelihood = -5524.0425
Iteration 3:   log likelihood = -5523.8868
Iteration 4:   log likelihood = -5523.8868

Multinomial logistic regression                 Number of obs   =       5839
                                                LR chi2(38)     =     821.31
                                                Prob > chi2     =     0.0000
Log likelihood = -5523.8868                     Pseudo R2       =     0.0692

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.013009   .0054077     2.42   0.015     1.002465    1.023664
       exper |    1.04246   .0069114     6.27   0.000     1.029001    1.056094
        male |    1.14115    .099977     1.51   0.132     .9610992     1.35493
```

```
         age |   .9694403   .0049959    -6.02   0.000     .9596979    .9792816
pyacctrati~2 |    .954291   .0421766    -1.06   0.290     .8751055    1.040642
pyperstudlep |    1.00106    .002581     0.41   0.681     .9960143    1.006132
pyperstude~s |   .9948904   .0034584    -1.47   0.141     .9881351    1.001692
pyperstudw~e |   .9991755   .0046176    -0.18   0.858      .990166    1.008267
pyperstudb~k |   1.000927   .0058305     0.16   0.874     .9895643     1.01242
pyperstudl~o |   1.003728   .0056955     0.66   0.512     .9926264    1.014953
pyperstudm~e |   1.008277   .0053716     1.55   0.122     .9978039     1.01886
       Asian |   .6243584   .2224329    -1.32   0.186     .3105891     1.25511
       Black |   .8811342   .0840472    -1.33   0.185     .7308865    1.062268
      Latino |   1.597776   .1847699     4.05   0.000     1.273742    2.004243
       Other |   1.036054   .3625686     0.10   0.919     .5217991    2.057129
   AsianMale |   .5287667   .3860975    -0.87   0.383     .1263949    2.212069
   BlackMale |   1.634432   .2549565     3.15   0.002     1.203891    2.218945
  LatinoMale |    .966827   .1831916    -0.18   0.859     .6669075    1.401625
   OtherMale |   1.977466   1.224216     1.10   0.271     .5876845    6.653862
-------------+----------------------------------------------------------------
3            |
      tenure |   1.026931   .0060808     4.49   0.000     1.015082    1.038919
       exper |   1.121831   .0102051    12.64   0.000     1.102007    1.142012
        male |   1.281659   .1409622     2.26   0.024     1.033127    1.589978
         age |    .948513     .00738    -6.79   0.000     .9341582    .9630883
pyacctrati~2 |   1.448642   .0826499     6.50   0.000      1.29538    1.620038
pyperstudlep |   1.015513   .0032949     4.74   0.000     1.009075    1.021991
pyperstude~s |   1.016179   .0044365     3.68   0.000     1.007521    1.024911
pyperstudw~e |   1.011025   .0060745     1.82   0.068     .9991892    1.023001
pyperstudb~k |   1.005374   .0076962     0.70   0.484     .9904026    1.020572
pyperstudl~o |   .9915839   .0072312    -1.16   0.246     .9775118    1.005858
pyperstudm~e |   .9992509   .0068458    -0.11   0.913     .9859231    1.012759
       Asian |   .5596289   .2649636    -1.23   0.220     .2212522    1.415509
       Black |   .5390793    .069883    -4.77   0.000     .4181269    .6950199
      Latino |   1.243659   .1811088     1.50   0.134     .9348556    1.654467
       Other |   .7149802   .3979874    -0.60   0.547     .2401487    2.128667
   AsianMale |   1.036136   .9487781     0.04   0.969     .1721794    6.235228
   BlackMale |   1.797626   .3823687     2.76   0.006     1.184793    2.727447
  LatinoMale |   .9182877   .2316881    -0.34   0.735     .5600372    1.505708
   OtherMale |   4.123497   3.387593     1.72   0.085     .8240904    20.63273
------------------------------------------------------------------------------


---------->  region = 5

Iteration 0:   log likelihood = -520.49973
Iteration 1:   log likelihood = -471.40607
Iteration 2:   log likelihood =  -469.3157
Iteration 3:   log likelihood = -469.23177
Iteration 4:   log likelihood = -469.21648
Iteration 5:   log likelihood = -469.21312
Iteration 6:   log likelihood = -469.21232
Iteration 7:   log likelihood = -469.21214
Iteration 8:   log likelihood =  -469.2121
Iteration 9:   log likelihood =  -469.2121

Multinomial logistic regression                 Number of obs   =        500
                                                LR chi2(38)     =     102.58
                                                Prob > chi2     =     0.0000
Log likelihood =  -469.2121                     Pseudo R2       =     0.0985

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9943295   .0176314    -0.32   0.748     .9603663    1.029494
       exper |   .9769468   .0232104    -0.98   0.326     .9324982    1.023514
        male |   1.360801   .3744608     1.12   0.263     .7935305    2.333595
```

```
         age |   1.024692   .0193591     1.29   0.197     .9874431    1.063347
pyacctrati~2 |   .8410343   .1373349    -1.06   0.289     .6106868    1.158268
pyperstudlep |   1.042894    .034156     1.28   0.200     .9780526    1.112034
pyperstude~s |   1.005317   .0105443     0.51   0.613     .9848614    1.026197
pyperstudw~e |   .9917908   .0546395    -0.15   0.881     .8902785    1.104878
pyperstudb~k |   .9820318   .0553461    -0.32   0.748     .8793321    1.096726
pyperstudl~o |   .9607022   .0674632    -0.57   0.568     .8371727    1.102459
pyperstudm~e |   .9888161   .0288116    -0.39   0.700     .9339287    1.046929
       Asian |   5.53e+07   1.73e+11     0.01   0.995            0           .
       Black |   2.001871   .8186083     1.70   0.090     .8981759    4.461807
      Latino |    .425106   .4729456    -0.77   0.442     .0480292    3.762612
       Other |   7.388245   8.933319     1.65   0.098     .6907666    79.02258
   AsianMale |   1.54e-08   .0000994    -0.00   0.998            0           .
   BlackMale |   2.028515   1.137055     1.26   0.207     .6761603    6.085649
  LatinoMale |   1.29e-06    .002056    -0.01   0.993            0           .
   OtherMale |    1991387   6.22e+09     0.00   0.996            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.005907    .017412     0.34   0.734     .9723521    1.040619
       exper |   1.085206    .029865     2.97   0.003     1.028223    1.145348
        male |    2.05188   .5830763     2.53   0.011     1.175625    3.581255
         age |   .9663506   .0236924    -1.40   0.163     .9210124    1.013921
pyacctrati~2 |   1.898242    .338274     3.60   0.000     1.338641    2.691776
pyperstudlep |   .9983752   .0338176    -0.05   0.962     .9342463    1.066906
pyperstude~s |   1.009406   .0104455     0.90   0.366      .989139    1.030087
pyperstudw~e |   .9873918    .048811    -0.26   0.797     .8962125    1.087848
pyperstudb~k |   .9641826   .0490191    -0.72   0.473     .8727385    1.065208
pyperstudl~o |    .991625   .0623901    -0.13   0.894     .8765818    1.121767
pyperstudm~e |   1.009916   .0318198     0.31   0.754     .9494367    1.074247
       Asian |   5.431128   29522.67     0.00   1.000            0           .
       Black |   2.552881   1.214842     1.97   0.049     1.004543    6.487727
      Latino |   .4553155    .532153    -0.67   0.501      .046075    4.499455
       Other |   3.922541   6.311546     0.85   0.396     .1674733     91.8733
   AsianMale |    7412847   4.71e+10     0.00   0.998            0           .
   BlackMale |   .9984153   .6667318    -0.00   0.998     .2697039    3.696027
  LatinoMale |   1.469191   2.801043     0.20   0.840     .0350142    61.64698
   OtherMale |   .0716685   389.5774    -0.00   1.000            0           .
------------------------------------------------------------------------------


--------->  region = 6

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1066.3433
Iteration 1:   log likelihood = -998.72215
Iteration 2:   log likelihood = -996.52106
Iteration 3:   log likelihood = -996.37435
Iteration 4:   log likelihood = -996.34989
Iteration 5:   log likelihood = -996.34435
Iteration 6:   log likelihood = -996.34298
Iteration 7:   log likelihood = -996.34272
Iteration 8:   log likelihood = -996.34267
Iteration 9:   log likelihood = -996.34266

Multinomial logistic regression                 Number of obs   =       1018
                                                LR chi2(36)     =     140.00
                                                Prob > chi2     =     0.0000
Log likelihood = -996.34266                     Pseudo R2       =     0.0656

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.017459   .0132491     1.33   0.184     .9918202    1.043762
       exper |   1.018067   .0162227     1.12   0.261     .9867626    1.050365
```

```
        male |   1.487344   .2640291     2.24   0.025     1.050288    2.106271
         age |   .9708205   .0124104    -2.32   0.021     .9467988    .9954517
pyacctrati~2 |   .9334419   .1045743    -0.61   0.539      .749422    1.162648
pyperstudlep |   1.026986   .0129478     2.11   0.035      1.00192    1.052679
pyperstude~s |   .9837284   .0068471    -2.36   0.018     .9703994    .9972405
pyperstudw~e |   1.033339   .0277021     1.22   0.221     .9804452    1.089086
pyperstudb~k |   1.035497   .0304192     1.19   0.235     .9775599    1.096867
pyperstudl~o |   1.035868   .0283636     1.29   0.198     .9817416    1.092978
pyperstudm~e |   .9992942   .0123929    -0.06   0.955     .9752974    1.023881
       Asian |     .50907   .5980628    -0.57   0.565     .0509066    5.090744
       Black |   2.393991   .9203624     2.27   0.023     1.126888    5.085859
      Latino |   .6118377    .266103    -1.13   0.259     .2608724    1.434975
       Other |   3.250369   4.714772     0.81   0.416     .1893369    55.79946
   AsianMale |  (omitted)
   BlackMale |    1.35478   .9207565     0.45   0.655     .3575708     5.13305
  LatinoMale |   1.752393   1.188779     0.83   0.408     .4636583    6.623155
   OtherMale |    2934482   7.23e+09     0.01   0.995            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.016961   .0127225     1.34   0.179     .9923282    1.042205
       exper |   1.087185   .0192079     4.73   0.000     1.050182    1.125491
        male |   2.066386   .3971857     3.78   0.000      1.41775     3.01178
         age |   .9625986   .0147314    -2.49   0.013     .9341543    .9919091
pyacctrati~2 |   1.061821   .1304205     0.49   0.625     .8346425    1.350834
pyperstudlep |   1.040167   .0145539     2.81   0.005      1.01203    1.069087
pyperstude~s |   1.021616   .0078382     2.79   0.005     1.006369    1.037095
pyperstudw~e |   1.029273   .0282947     1.05   0.294     .9752838    1.086251
pyperstudb~k |   1.021004   .0300944     0.71   0.481     .9636912    1.081725
pyperstudl~o |   .9975068   .0278069    -0.09   0.929     .9444684    1.053524
pyperstudm~e |   .9639042   .0181358    -1.95   0.051     .9290062    1.000113
       Asian |   1.02e-06   .0009699    -0.01   0.988            0           .
       Black |   1.858605   .8223532     1.40   0.161     .7808489    4.423921
      Latino |   .3704412   .2389255    -1.54   0.124     .1046442    1.311364
       Other |   1.66e-06   .0023296    -0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |   .5710486   .4746042    -0.67   0.500     .1120033     2.91149
  LatinoMale |   3.705191   3.171607     1.53   0.126     .6921345    19.83493
   OtherMale |   105598.5   4.81e+08     0.00   0.998            0           .
------------------------------------------------------------------------------


--------->  region = 7

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1198.5806
Iteration 1:   log likelihood = -1133.1101
Iteration 2:   log likelihood = -1131.9044
Iteration 3:   log likelihood = -1131.7933
Iteration 4:   log likelihood = -1131.7723
Iteration 5:   log likelihood = -1131.7678
Iteration 6:   log likelihood = -1131.7668
Iteration 7:   log likelihood = -1131.7665
Iteration 8:   log likelihood = -1131.7665
Iteration 9:   log likelihood = -1131.7665

Multinomial logistic regression                 Number of obs   =       1167
                                                LR chi2(34)     =     133.63
                                                Prob > chi2     =     0.0000
Log likelihood = -1131.7665                     Pseudo R2       =     0.0557

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
```

```
      tenure |   .9896779   .0114619    -0.90   0.370     .9674661      1.0124
       exper |    1.02581   .0142969     1.83   0.067     .9981674    1.054217
        male |   2.004591   .3630603     3.84   0.000     1.405598    2.858845
         age |   .9687467   .0114823    -2.68   0.007     .9465012    .9915151
pyacctrati~2 |   .9288238   .1097825    -0.62   0.532     .7367589    1.170958
pyperstudlep |   .9984581   .0127657    -0.12   0.904     .9737487    1.023795
pyperstude~s |   1.004533   .0078504     0.58   0.563     .9892636    1.020038
pyperstudw~e |   .8387023   .0530399    -2.78   0.005     .7409304    .9493759
pyperstudb~k |   .8370233   .0543702    -2.74   0.006     .7369643    .9506676
pyperstudl~o |   .8459239   .0544959    -2.60   0.009      .745582    .9597699
pyperstudm~e |   .9725014   .0186499    -1.45   0.146     .9366266     1.00975
       Asian |  (omitted)
       Black |   1.865683   .5553597     2.10   0.036     1.041022    3.343612
      Latino |   2.260283   1.372712     1.34   0.179     .6874043    7.432134
       Other |   2.937853   2.482734     1.28   0.202     .5606516    15.39456
   AsianMale |  (omitted)
   BlackMale |   .9955965   .4833365    -0.01   0.993     .3844562    2.578219
  LatinoMale |    1.83318   1.922604     0.58   0.563     .2346829    14.31954
   OtherMale |   .3819567   .4832692    -0.76   0.447     .0319915    4.560301
-------------+----------------------------------------------------------------
3            |
      tenure |   .9917954      .0102    -0.80   0.423     .9720039     1.01199
       exper |   1.039255   .0133713     2.99   0.003     1.013375    1.065795
        male |   2.064665   .3505049     4.27   0.000      1.48029    2.879736
         age |   .9845009   .0110293    -1.39   0.163     .9631194    1.006357
pyacctrati~2 |   1.138976   .1235293     1.20   0.230      .920866    1.408747
pyperstudlep |   1.031939   .0136527     2.38   0.017     1.005524    1.059047
pyperstude~s |   1.032282   .0072798     4.51   0.000     1.018112    1.046649
pyperstudw~e |   .9150604   .0639964    -1.27   0.204     .7978467    1.049494
pyperstudb~k |   .8994782   .0641872    -1.48   0.138     .7820752    1.034506
pyperstudl~o |   .8789827   .0626599    -1.81   0.070     .7643652    1.010787
pyperstudm~e |   .9925162   .0157268    -0.47   0.635     .9621659    1.023824
       Asian |  (omitted)
       Black |   1.420542   .4446945     1.12   0.262     .7691115    2.623729
      Latino |   .7794758   .6395057    -0.30   0.761     .1561173    3.891834
       Other |   1.742915   1.623649     0.60   0.551     .2807514    10.82008
   AsianMale |  (omitted)
   BlackMale |   1.292977   .6303378     0.53   0.598     .4973046    3.361701
  LatinoMale |   6.124211   7.369564     1.51   0.132     .5791052    64.76536
   OtherMale |   2.90e-07   .0002772    -0.02   0.987            0           .
------------------------------------------------------------------------------


---------->  region = 8

note: AsianMale omitted because of collinearity
note: LatinoMale omitted because of collinearity
Iteration 0:   log likelihood = -389.94942
Iteration 1:   log likelihood = -341.89746
Iteration 2:   log likelihood = -340.28353
Iteration 3:   log likelihood = -340.16855
Iteration 4:   log likelihood = -340.14342
Iteration 5:   log likelihood =  -340.1377
Iteration 6:   log likelihood = -340.13645
Iteration 7:   log likelihood = -340.13627
Iteration 8:   log likelihood = -340.13624

Multinomial logistic regression                 Number of obs   =        372
                                                LR chi2(34)     =      99.63
                                                Prob > chi2     =     0.0000
Log likelihood = -340.13624                     Pseudo R2       =     0.1277

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
```

```
2             |
      tenure |   1.054235   .0226363     2.46   0.014      1.01079    1.099549
       exper |   .9777401   .0281201    -0.78   0.434     .9241503    1.034438
        male |   3.424603    1.15791     3.64   0.000     1.765249    6.643767
         age |   .9928996   .0241115    -0.29   0.769      .946749      1.0413
pyacctrati~2 |   1.429824    .281987     1.81   0.070     .9714277    2.104529
pyperstudlep |   1.035193   .0311882     1.15   0.251     .9758355    1.098162
pyperstude~s |   .9609427   .0137964    -2.77   0.006     .9342792    .9883671
pyperstudw~e |   1.077875   .1658317     0.49   0.626     .7972798    1.457224
pyperstudb~k |   1.144184    .177213     0.87   0.384     .8446182    1.549998
pyperstudl~o |   1.112382    .169239     0.70   0.484     .8255649    1.498845
pyperstudm~e |   1.014369   .0289327     0.50   0.617     .9592177    1.072691
       Asian |   .5648102   1511.352    -0.00   1.000            0           .
       Black |    2.62731    1.48433     1.71   0.087     .8681904    7.950743
      Latino |   2.779727   4.076239     0.70   0.486     .1569588    49.22873
       Other |   8.35e-06   .0050654    -0.02   0.985            0           .
   AsianMale |  (omitted)
   BlackMale |   1.173967   1.518941     0.12   0.901     .0929665     14.8247
  LatinoMale |  (omitted)
   OtherMale |   127373.5   3.49e+08     0.00   0.997            0           .
-------------+----------------------------------------------------------------
3             |
      tenure |   1.046738   .0197282     2.42   0.015     1.008777    1.086128
       exper |   .9995908   .0264202    -0.02   0.988     .9491265    1.052738
        male |   2.643987    .789517     3.26   0.001     1.472595    4.747176
         age |   .9867348   .0226438    -0.58   0.561     .9433372    1.032129
pyacctrati~2 |   1.996686   .3814972     3.62   0.000     1.373013    2.903653
pyperstudlep |   1.023064   .0309526     0.75   0.451     .9641615    1.085564
pyperstude~s |    1.01203   .0123748     0.98   0.328     .9880637    1.036577
pyperstudw~e |   1.249554    .158495     1.76   0.079     .9745127    1.602221
pyperstudb~k |   1.255321   .1610129     1.77   0.076     .9762839    1.614112
pyperstudl~o |   1.225203    .154663     1.61   0.108     .9566586    1.569131
pyperstudm~e |   1.005088   .0291597     0.17   0.861     .9495308    1.063896
       Asian |   576500.5   8.70e+08     0.01   0.993            0           .
       Black |   1.501569   .9271454     0.66   0.510     .4476823    5.036405
      Latino |   6.694762   8.042459     1.58   0.113     .6355964    70.51619
       Other |   13.52832   15.85122     2.22   0.026     1.361086    134.4629
   AsianMale |  (omitted)
   BlackMale |   1.620427   2.260495     0.35   0.729     .1052456    24.94911
  LatinoMale |  (omitted)
   OtherMale |     340374   5.14e+08     0.01   0.993            0           .
------------------------------------------------------------------------------


---------->  region = 9

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -245.09133
Iteration 1:   log likelihood = -218.79517
Iteration 2:   log likelihood = -217.22142
Iteration 3:   log likelihood = -216.86011
Iteration 4:   log likelihood = -216.80243
Iteration 5:   log likelihood = -216.78794
Iteration 6:   log likelihood = -216.78481
Iteration 7:   log likelihood = -216.78411
Iteration 8:   log likelihood =   -216.784
Iteration 9:   log likelihood = -216.78397
Iteration 10:  log likelihood = -216.78397

Multinomial logistic regression                 Number of obs   =        230
                                                LR chi2(34)     =      56.61
                                                Prob > chi2     =     0.0088
Log likelihood = -216.78397                     Pseudo R2       =     0.1155

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
```

```
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9895404   .0286538    -0.36   0.717     .9349439    1.047325
       exper |   .9848909   .0370421    -0.40   0.686     .9149011    1.060235
        male |   .5896301   .2530397    -1.23   0.218      .254265    1.367328
         age |   .9888908   .0303038    -0.36   0.715     .9312448    1.050105
pyacctrati~2 |   1.482966   .4003046     1.46   0.144     .8736996      2.5171
pyperstudlep |   1.101155   .0778375     1.36   0.173     .9586924    1.264787
pyperstude~s |   .9920421   .0191664    -0.41   0.679     .9551789    1.030328
pyperstudw~e |   .7583646   .0846504    -2.48   0.013     .6093474    .9438241
pyperstudb~k |   .7649694   .0907059    -2.26   0.024     .6063358    .9651057
pyperstudl~o |     .75958   .0884876    -2.36   0.018     .6045225    .9544091
pyperstudm~e |    1.01645   .0302252     0.55   0.583     .9589029    1.077451
       Asian |  (omitted)
       Black |     3.6023   4.895045     0.94   0.346     .2511368    51.67128
      Latino |   1.00e-07   .0003911    -0.00   0.997            0           .
       Other |   1.17e+08   6.63e+11     0.00   0.997            0           .
   AsianMale |  (omitted)
   BlackMale |   2.839825   5.312017     0.56   0.577     .0726243    111.0456
  LatinoMale |    9098331   4.78e+10     0.00   0.998            0           .
   OtherMale |   .0796522   473.4925    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.014693   .0218351     0.68   0.498     .9727875    1.058405
       exper |   1.045389    .032907     1.41   0.158     .9828418    1.111917
        male |   1.479719   .5071591     1.14   0.253     .7558545    2.896811
         age |   .9636552   .0275329    -1.30   0.195     .9111749    1.019158
pyacctrati~2 |   1.567007   .3527938     2.00   0.046     1.007935     2.43618
pyperstudlep |   1.038636   .0643191     0.61   0.540     .9199224    1.172668
pyperstude~s |   .9895105   .0155558    -0.67   0.502     .9594867    1.020474
pyperstudw~e |   1.055964   .1004295     0.57   0.567     .8763828    1.272343
pyperstudb~k |   1.050786   .1053059     0.49   0.621     .8633963    1.278847
pyperstudl~o |   1.062366    .105142     0.61   0.541     .8750461    1.289785
pyperstudm~e |   1.028421   .0249503     1.16   0.248     .9806636    1.078504
       Asian |  (omitted)
       Black |   2.508948   3.819605     0.60   0.546     .1269487    49.58552
      Latino |   1.23e-07   .0003654    -0.01   0.996            0           .
       Other |   1.614427   13189.74     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   1.11e-07    .000212    -0.01   0.993            0           .
  LatinoMale |   5.28e+13   1.87e+17     0.01   0.993            0           .
   OtherMale |    2478290   2.07e+10     0.00   0.999            0           .
------------------------------------------------------------------------------


---------> region = 10

Iteration 0:   log likelihood = -4373.9062
Iteration 1:   log likelihood = -4092.4283
Iteration 2:   log likelihood = -4084.1716
Iteration 3:   log likelihood = -4084.1285
Iteration 4:   log likelihood = -4084.1285

Multinomial logistic regression                 Number of obs   =       4175
                                                LR chi2(38)     =     579.56
                                                Prob > chi2     =     0.0000
Log likelihood = -4084.1285                     Pseudo R2       =     0.0663

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.013039    .006489     2.02   0.043     1.000401    1.025838
```

```
       exper |   1.042585   .0082308     5.28   0.000     1.026578    1.058843
        male |   1.226898   .1241013     2.02   0.043     1.006258    1.495919
         age |   .9636943   .0060126    -5.93   0.000     .9519816    .9755511
pyacctrati~2 |   .9364388   .0493346    -1.25   0.213     .8445696    1.038301
pyperstudlep |   1.000383   .0039463     0.10   0.923     .9926778    1.008147
pyperstude~s |   .9854015   .0038844    -3.73   0.000     .9778176    .9930442
pyperstudw~e |   .9928375   .0065247    -1.09   0.274     .9801312    1.005708
pyperstudb~k |   .9965551    .007462    -0.46   0.645     .9820367    1.011288
pyperstudl~o |   1.000849   .0074464     0.11   0.909       .98636    1.015551
pyperstudm~e |   1.002402   .0072822     0.33   0.741     .9882307    1.016777
       Asian |   1.094932   .4993786     0.20   0.842     .4478882    2.676731
       Black |   1.340122   .1578432     2.49   0.013     1.063868    1.688112
      Latino |   1.537418   .2406786     2.75   0.006     1.131198    2.089514
       Other |   .7600669    .306055    -0.68   0.496      .345223    1.673416
   AsianMale |   1.111588   .7960901     0.15   0.883     .2731089    4.524306
   BlackMale |   1.540072   .2996872     2.22   0.026     1.051727    2.255168
  LatinoMale |   1.431128   .3692873     1.39   0.165     .8630477    2.373132
   OtherMale |   1.025151   .6626745     0.04   0.969     .2887731    3.639306
-------------+----------------------------------------------------------------
3            |
      tenure |    1.01837   .0064853     2.86   0.004     1.005738    1.031161
       exper |   1.085475   .0096009     9.27   0.000      1.06682    1.104456
        male |   1.323414   .1472805     2.52   0.012     1.064062     1.64598
         age |   .9713082   .0072024    -3.93   0.000     .9572938    .9855277
pyacctrati~2 |   1.402376   .0851915     5.57   0.000     1.244961    1.579695
pyperstudlep |   1.018911   .0046399     4.11   0.000     1.009858    1.028046
pyperstude~s |   1.016823    .004196     4.04   0.000     1.008632     1.02508
pyperstudw~e |   1.000697   .0072126     0.10   0.923     .9866598    1.014933
pyperstudb~k |    .990489   .0082978    -1.14   0.254     .9743584    1.006887
pyperstudl~o |   .9735365    .007847    -3.33   0.001     .9582776    .9890385
pyperstudm~e |   .9851646   .0086178    -1.71   0.088      .968418    1.002201
       Asian |   1.013754   .5931561     0.02   0.981     .3220236    3.191375
       Black |   .8967542     .12948    -0.75   0.450     .6757261     1.19008
      Latino |   1.285115    .224532     1.44   0.151      .912478     1.80993
       Other |   .4530365   .2394136    -1.50   0.134     .1608065    1.276329
   AsianMale |   .3745436   .4591537    -0.80   0.423     .0338854    4.139921
   BlackMale |   1.667631   .4001674     2.13   0.033     1.041943    2.669043
  LatinoMale |    1.52143   .4470162     1.43   0.153     .8553769    2.706114
   OtherMale |   2.090181   1.605673     0.96   0.337     .4637594    9.420524
------------------------------------------------------------------------------


--------->  region = 11

Iteration 0:   log likelihood = -3234.1188
Iteration 1:   log likelihood = -3038.4671
Iteration 2:   log likelihood =  -3033.015
Iteration 3:   log likelihood = -3032.9928
Iteration 4:   log likelihood = -3032.9928

Multinomial logistic regression                 Number of obs   =       3041
                                                LR chi2(38)     =     402.25
                                                Prob > chi2     =     0.0000
Log likelihood = -3032.9928                     Pseudo R2       =     0.0622

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.020694   .0077456     2.70   0.007     1.005625    1.035988
       exper |   1.021342   .0089264     2.42   0.016     1.003995    1.038988
        male |   1.245049    .129454     2.11   0.035     1.015506    1.526476
         age |   .9718891   .0066946    -4.14   0.000     .9588561    .9850992
pyacctrati~2 |   1.086523   .0688507     1.31   0.190     .9596214    1.230206
pyperstudlep |   .9915569   .0050327    -1.67   0.095      .981742     1.00147
```

```
pyperstude~s |   1.002513   .0042115     0.60   0.550     .9942923    1.010801
pyperstudw~e |   1.004029   .0094742     0.43   0.670     .9856303    1.022771
pyperstudb~k |   1.004549   .0110447     0.41   0.680     .9831332    1.026431
pyperstudl~o |   1.013526   .0105357     1.29   0.196     .9930855    1.034387
pyperstudm~e |   .9916229    .006132    -1.36   0.174      .979677    1.003715
       Asian |   3.323203   2.380854     1.68   0.094     .8160702    13.53276
       Black |   1.510989   .2462832     2.53   0.011     1.097791    2.079709
      Latino |   1.581208   .3287542     2.20   0.028     1.051993     2.37665
       Other |   .5667043    .238538    -1.35   0.177     .2483519     1.29314
   AsianMale |   .2554911   .2476306    -1.41   0.159     .0382263    1.707611
   BlackMale |   1.743006   .4956414     1.95   0.051     .9982769    3.043313
  LatinoMale |   .9477156   .3081999    -0.17   0.869     .5010312    1.792632
   OtherMale |   1.106085   .8198723     0.14   0.892      .258729    4.728588
-------------+----------------------------------------------------------------
3            |
      tenure |   1.020932   .0077491     2.73   0.006     1.005856    1.036233
       exper |   1.091056   .0110507     8.60   0.000      1.06961    1.112931
        male |   1.626469   .1905097     4.15   0.000     1.292837    2.046198
         age |   .9676572   .0083989    -3.79   0.000     .9513349    .9842595
pyacctrati~2 |   1.535366   .1130035     5.83   0.000     1.329117     1.77362
pyperstudlep |   1.007454   .0061305     1.22   0.222     .9955095    1.019541
pyperstude~s |   1.029637   .0048677     6.18   0.000     1.020141    1.039222
pyperstudw~e |   1.025139   .0116735     2.18   0.029     1.002513    1.048276
pyperstudb~k |   1.015598   .0135956     1.16   0.248     .9892976    1.042597
pyperstudl~o |   1.005865   .0125825     0.47   0.640     .9815041    1.030832
pyperstudm~e |   .9767999   .0079972    -2.87   0.004     .9612509    .9926005
       Asian |   1.403216   1.349969     0.35   0.725     .2129233    9.247534
       Black |   1.191257   .2522847     0.83   0.409     .7865708    1.804152
      Latino |   1.106512    .284499     0.39   0.694     .6684992    1.831519
       Other |   .6566068   .3170916    -0.87   0.384     .2548234    1.691888
   AsianMale |   .4116241     .53341    -0.68   0.493     .0324681    5.218488
   BlackMale |   1.496256   .5570912     1.08   0.279     .7212467    3.104047
  LatinoMale |   1.393657   .5396709     0.86   0.391     .6524424    2.976938
   OtherMale |    1.39326   1.092346     0.42   0.672     .2996896    6.477278
------------------------------------------------------------------------------


--------->  region = 12

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1011.5962
Iteration 1:   log likelihood = -941.26238
Iteration 2:   log likelihood = -938.83184
Iteration 3:   log likelihood = -938.57522
Iteration 4:   log likelihood = -938.51396
Iteration 5:   log likelihood = -938.50141
Iteration 6:   log likelihood = -938.49877
Iteration 7:   log likelihood = -938.49817
Iteration 8:   log likelihood = -938.49802
Iteration 9:   log likelihood = -938.49799

Multinomial logistic regression                 Number of obs   =        948
                                                LR chi2(36)     =     146.20
                                                Prob > chi2     =     0.0000
Log likelihood = -938.49799                     Pseudo R2       =     0.0723

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.014691   .0125229     1.18   0.237      .990441    1.039535
       exper |   1.003434   .0158312     0.22   0.828     .9728801    1.034947
        male |   .9424286   .1826342    -0.31   0.760     .6446043    1.377856
         age |   .9879421   .0122571    -0.98   0.328     .9642084     1.01226
pyacctrati~2 |   1.010018   .1135477     0.09   0.929     .8102813    1.258991
```

```
pyperstudlep |   1.008723   .0153096     0.57   0.567     .9791583     1.03918
pyperstude~s |   .9969179   .0073702    -0.42   0.676     .9825768    1.011468
pyperstudw~e |   .8745876   .0509367    -2.30   0.021     .7802407    .9803428
pyperstudb~k |   .8856487   .0542829    -1.98   0.048     .7853981    .9986955
pyperstudl~o |   .8909788   .0524013    -1.96   0.050     .7939725    .9998372
pyperstudm~e |   1.004442   .0111457     0.40   0.690     .9828329    1.026526
       Asian |   1.13e+07   1.91e+10     0.01   0.992            0           .
       Black |   .9070936     .27044    -0.33   0.744     .5056799    1.627153
      Latino |   .3756222   .1804606    -2.04   0.042     .1464899    .9631524
       Other |   1.26e-06   .0007263    -0.02   0.981            0           .
   AsianMale |  (omitted)
   BlackMale |   2.507752   1.227694     1.88   0.060     .9606626    6.546336
  LatinoMale |   3.865709   2.647192     1.97   0.048     1.010035    14.79524
   OtherMale |     2.3748   2298.826     0.00   0.999            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9964255   .0114218    -0.31   0.755     .9742887    1.019065
       exper |   1.078372   .0187269     4.34   0.000     1.042285    1.115707
        male |   1.267592    .247706     1.21   0.225     .8642562     1.85916
         age |     .96361   .0143233    -2.49   0.013     .9359417    .9920961
pyacctrati~2 |   1.492119    .172319     3.47   0.001     1.189875    1.871136
pyperstudlep |   1.034198   .0160966     2.16   0.031     1.003126    1.066233
pyperstude~s |   1.007699   .0081033     0.95   0.340     .9919417    1.023708
pyperstudw~e |   1.082597   .0697272     1.23   0.218     .9542086    1.228261
pyperstudb~k |   1.092412   .0738584     1.31   0.191     .9568331    1.247201
pyperstudl~o |   1.071533   .0703214     1.05   0.292     .9422012    1.218617
pyperstudm~e |   .9867483   .0140354    -0.94   0.348     .9596192    1.014644
       Asian |   1.645218   4599.691     0.00   1.000            0           .
       Black |   .7294865   .2648219    -0.87   0.385     .3581045     1.48602
      Latino |   .2067048   .1405347    -2.32   0.020     .0545299    .7835495
       Other |   1.552981   1.264935     0.54   0.589     .3146624    7.664561
   AsianMale |  (omitted)
   BlackMale |   1.650344   .9540627     0.87   0.386     .5314901    5.124524
  LatinoMale |   4.089537   3.653976     1.58   0.115     .7097916    23.56229
   OtherMale |   1.227603   1.546593     0.16   0.871     .1039138    14.50249
------------------------------------------------------------------------------


---------->  region = 13

Iteration 0:   log likelihood = -1898.2923
Iteration 1:   log likelihood = -1811.9548
Iteration 2:   log likelihood = -1810.5043
Iteration 3:   log likelihood = -1810.4437
Iteration 4:   log likelihood = -1810.4338
Iteration 5:   log likelihood = -1810.4315
Iteration 6:   log likelihood =  -1810.431
Iteration 7:   log likelihood = -1810.4309
Iteration 8:   log likelihood = -1810.4308

Multinomial logistic regression                 Number of obs   =       1755
                                                LR chi2(38)     =     175.72
                                                Prob > chi2     =     0.0000
Log likelihood = -1810.4308                     Pseudo R2       =     0.0463

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.001438   .0097137     0.15   0.882     .9825795    1.020659
       exper |    .984541   .0100897    -1.52   0.128     .9649628    1.004516
        male |   1.036305   .1479433     0.25   0.803     .7833752    1.370899
         age |   .9866861    .008279    -1.60   0.110     .9705923    1.003047
pyacctrati~2 |   1.047691   .0807148     0.60   0.545      .900857    1.218457
pyperstudlep |   1.003271   .0061098     0.54   0.592     .9913676    1.015318
```

```
pyperstude~s |   .9924534   .0059599    -1.26   0.207     .9808406    1.004204
pyperstudw~e |   .9814751   .0136984    -1.34   0.180     .9549906    1.008694
pyperstudb~k |   .9816688   .0171477    -1.06   0.290     .9486287     1.01586
pyperstudl~o |   .9895004   .0147458    -0.71   0.479     .9610171    1.018828
pyperstudm~e |   1.006325   .0085007     0.75   0.455     .9898008    1.023124
       Asian |   2.778481   3.425448     0.83   0.407     .2479732    31.13224
       Black |     2.0268   .4886006     2.93   0.003     1.263606    3.250948
      Latino |   1.342594    .266045     1.49   0.137     .9104855    1.979779
       Other |   .5713726   .4084567    -0.78   0.434     .1407413    2.319622
   AsianMale |   2.00e-06   .0007972    -0.03   0.974            0           .
   BlackMale |    .939414    .404778    -0.15   0.885     .4037275    2.185877
  LatinoMale |   1.229977   .3857322     0.66   0.509     .6651998    2.274268
   OtherMale |   .7443288   .8157448    -0.27   0.788     .0868747    6.377295
-------------+----------------------------------------------------------------
3            |
      tenure |   1.019476   .0095869     2.05   0.040     1.000858     1.03844
       exper |   1.036606   .0120553     3.09   0.002     1.013245    1.060505
        male |   .9552924   .1538136    -0.28   0.776     .6967591    1.309755
         age |   .9896361   .0100938    -1.02   0.307      .970049    1.009619
pyacctrati~2 |    1.51638   .1304993     4.84   0.000     1.281014    1.794991
pyperstudlep |   1.000446   .0066493     0.07   0.946     .9874986    1.013564
pyperstude~s |   1.010632   .0064648     1.65   0.098     .9980403    1.023382
pyperstudw~e |   .9880739   .0152253    -0.78   0.436      .958679     1.01837
pyperstudb~k |   .9744982   .0189966    -1.33   0.185     .9379678    1.012451
pyperstudl~o |   .9851143   .0160766    -0.92   0.358     .9541033    1.017133
pyperstudm~e |   .9959463   .0104666    -0.39   0.699      .975642    1.016673
       Asian |   7.432844   8.239043     1.81   0.070     .8465027     65.2652
       Black |   1.542986   .4483106     1.49   0.135     .8730673    2.726945
      Latino |   1.035168   .2317692     0.15   0.877     .6674682    1.605428
       Other |   1.125445   .7501196     0.18   0.859     .3047826    4.155833
   AsianMale |   .2422812   .4494216    -0.76   0.445     .0063882    9.188892
   BlackMale |   .8530942   .4786877    -0.28   0.777     .2840346    2.562257
  LatinoMale |   1.737271   .6232467     1.54   0.124     .8600001    3.509429
   OtherMale |   .3280092   .4208349    -0.87   0.385     .0265336    4.054853
------------------------------------------------------------------------------


--------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -267.90082
Iteration 1:   log likelihood = -225.90264
Iteration 2:   log likelihood = -221.34489
Iteration 3:   log likelihood = -220.86067
Iteration 4:   log likelihood = -220.82393
Iteration 5:   log likelihood =  -220.8173
Iteration 6:   log likelihood = -220.81582
Iteration 7:   log likelihood = -220.81546
Iteration 8:   log likelihood = -220.81538
Iteration 9:   log likelihood = -220.81537

Multinomial logistic regression                 Number of obs   =        274
                                                LR chi2(30)     =      94.17
                                                Prob > chi2     =     0.0000
Log likelihood = -220.81537                     Pseudo R2       =     0.1758

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9798442   .0289864    -0.69   0.491     .9246476    1.038336
       exper |   1.003243    .039827     0.08   0.935     .9281427    1.084419
```

```
        male |   .7774041   .3512143    -0.56   0.577     .3206952    1.884522
         age |   1.058964   .0392257     1.55   0.122     .9848071    1.138704
pyacctrati~2 |   .7270323   .2210415    -1.05   0.294     .4006459    1.319309
pyperstudlep |   1.049853   .1134823     0.45   0.653     .8494137    1.297592
pyperstude~s |   .9595736   .0218207    -1.81   0.070     .9177449    1.003309
pyperstudw~e |   .8698693   .1777645    -0.68   0.495     .5827797    1.298385
pyperstudb~k |   .9050377   .2183624    -0.41   0.679     .5640187    1.452245
pyperstudl~o |   .9015275   .1821691    -0.51   0.608     .6067071    1.339612
pyperstudm~e |   1.021439   .0444044     0.49   0.626      .938013    1.112286
       Asian |  (omitted)
       Black |    7032195   8.12e+09     0.01   0.989            0           .
      Latino |   .0000115   .0089282    -0.01   0.988            0           .
       Other |   .0000157   .0123736    -0.01   0.989            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |    1489346   1.15e+09     0.02   0.985            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.004961   .0214022     0.23   0.816      .963877    1.047796
       exper |   1.026324   .0302969     0.88   0.379     .9686288    1.087457
        male |   3.279299   1.101919     3.53   0.000     1.697298    6.335839
         age |   1.034934   .0281191     1.26   0.206     .9812632     1.09154
pyacctrati~2 |   1.337493   .2751107     1.41   0.157     .8937305    2.001595
pyperstudlep |   1.127521   .0678178     2.00   0.046     1.002137    1.268594
pyperstude~s |   1.050603   .0149795     3.46   0.001      1.02165    1.080377
pyperstudw~e |   1.010601   .1656669     0.06   0.949     .7328967     1.39353
pyperstudb~k |   .9661114   .1757885    -0.19   0.850      .676312     1.38009
pyperstudl~o |   .9834907   .1602341    -0.10   0.919     .7146432    1.353478
pyperstudm~e |   .9746023   .0271952    -0.92   0.357     .9227319    1.029388
       Asian |  (omitted)
       Black |    2258737   2.61e+09     0.01   0.990            0           .
      Latino |   4.415253   5.974982     1.10   0.272     .3112141    62.64003
       Other |   1.607542   2.081275     0.37   0.714     .1270916    20.33329
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   .9223006   1.672559    -0.04   0.964     .0263785    32.24747
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 15

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -284.16402
Iteration 1:   log likelihood = -251.33827
Iteration 2:   log likelihood = -246.04347
Iteration 3:   log likelihood = -245.85281
Iteration 4:   log likelihood = -245.83466
Iteration 5:   log likelihood = -245.83084
Iteration 6:   log likelihood = -245.82997
Iteration 7:   log likelihood = -245.82984
Iteration 8:   log likelihood = -245.82982

Multinomial logistic regression                 Number of obs   =        274
                                                LR chi2(30)     =      76.67
                                                Prob > chi2     =     0.0000
Log likelihood = -245.82982                     Pseudo R2       =     0.1349

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
```

```
2             |
      tenure |   .9978737   .0359058    -0.06   0.953     .9299237    1.070789
       exper |   .9428781   .0348994    -1.59   0.112     .8768987    1.013822
        male |   .6335802   .3185819    -0.91   0.364     .2364796    1.697499
         age |   .9949494   .0288265    -0.17   0.861     .9400247    1.053083
pyacctrati~2 |   .4902826   .1451977    -2.41   0.016     .2743862    .8760535
pyperstudlep |   .9634207   .0322308    -1.11   0.265     .9022761    1.028709
pyperstude~s |   1.025416   .0181482     1.42   0.156     .9904565     1.06161
pyperstudw~e |   .6310843   .1308879    -2.22   0.026     .4202878    .9476065
pyperstudb~k |   .7483239   .1729364    -1.25   0.210     .4757496    1.177066
pyperstudl~o |   .6367529   .1318503    -2.18   0.029     .4243415    .9554904
pyperstudm~e |   .9979876   .0289032    -0.07   0.945     .9429162    1.056276
       Asian |  (omitted)
       Black |   6.561048   8.728803     1.41   0.157     .4836562    89.00404
      Latino |   3.699127   2.129762     2.27   0.023     1.196802    11.43342
       Other |   3.59e-11   2.15e-08    -0.04   0.968            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   2.314767    2.03653     0.95   0.340     .4126872    12.98355
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3             |
      tenure |   .9675466   .0204375    -1.56   0.118     .9283077    1.008444
       exper |   1.044216   .0278616     1.62   0.105     .9910119    1.100277
        male |   .8086954   .2732792    -0.63   0.530     .4170055    1.568296
         age |   .9625078   .0235886    -1.56   0.119     .9173678    1.009869
pyacctrati~2 |   1.501275   .3056559     2.00   0.046     1.007297    2.237499
pyperstudlep |   1.006978   .0228894     0.31   0.760     .9631003    1.052855
pyperstude~s |   1.017996   .0118203     1.54   0.125     .9950902    1.041429
pyperstudw~e |   1.101798   .1825709     0.59   0.559     .7962615    1.524574
pyperstudb~k |   1.088695   .2181111     0.42   0.671     .7351483    1.612269
pyperstudl~o |    1.09554   .1809033     0.55   0.581     .7926324    1.514205
pyperstudm~e |    .991471   .0179645    -0.47   0.636      .956879    1.027314
       Asian |  (omitted)
       Black |   2.098781   3.054856     0.51   0.611     .1210627    36.38512
      Latino |   .6935965    .349677    -0.73   0.468     .2582101    1.863119
       Other |   3.671928   7.764376     0.62   0.538     .0582115    231.6218
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   1.529708   1.276587     0.51   0.610     .2980272     7.85166
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 16

note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -549.61534
Iteration 1:   log likelihood = -496.79171
Iteration 2:   log likelihood = -495.40287
Iteration 3:   log likelihood = -495.26537
Iteration 4:   log likelihood =  -495.2332
Iteration 5:   log likelihood = -495.22659
Iteration 6:   log likelihood =  -495.2252
Iteration 7:   log likelihood = -495.22489
Iteration 8:   log likelihood = -495.22481
Iteration 9:   log likelihood = -495.22479

Multinomial logistic regression                 Number of obs   =        508
                                                LR chi2(34)     =     108.78
                                                Prob > chi2     =     0.0000
Log likelihood = -495.22479                     Pseudo R2       =     0.0990

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
```

```
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.075734    .021029     3.73   0.000     1.035298     1.11775
       exper |   .9377455   .0247231    -2.44   0.015     .8905198    .9874757
        male |   .9137029    .238119    -0.35   0.729     .5482446    1.522775
         age |   .9876258   .0205818    -0.60   0.550     .9480989    1.028801
pyacctrati~2 |   1.203211   .1768174     1.26   0.208     .9020978    1.604832
pyperstudlep |   1.033954   .0166072     2.08   0.038     1.001912    1.067022
pyperstude~s |   .9905635    .009836    -0.95   0.340     .9714716    1.010031
pyperstudw~e |   1.010004   .0312923     0.32   0.748     .9504976    1.073237
pyperstudb~k |   1.043234   .0409682     1.08   0.281     .9659501    1.126701
pyperstudl~o |   1.012537   .0298521     0.42   0.673     .9556866     1.07277
pyperstudm~e |   1.001799   .0129163     0.14   0.889     .9768011    1.027437
       Asian |   1.09e-06   .0022903    -0.01   0.995            0           .
       Black |   1.325133   1.121541     0.33   0.739     .2522525    6.961189
      Latino |   2.225765   1.472878     1.21   0.227      .608422    8.142421
       Other |    1198018   1.10e+09     0.02   0.988            0           .
   AsianMale |  (omitted)
   BlackMale |   315726.3   3.06e+08     0.01   0.990            0           .
  LatinoMale |   .8527827   .7867569    -0.17   0.863     .1398107    5.201594
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.029934   .0163732     1.86   0.064     .9983379     1.06253
       exper |   1.020756   .0227232     0.92   0.356     .9771775    1.066279
        male |   1.831159   .4590686     2.41   0.016     1.120292    2.993098
         age |   .9821655   .0201513    -0.88   0.380     .9434533    1.022466
pyacctrati~2 |   1.736445   .2490942     3.85   0.000     1.310858    2.300204
pyperstudlep |   1.051279   .0163892     3.21   0.001     1.019643    1.083897
pyperstude~s |   1.015987   .0085928     1.88   0.061      .999284    1.032969
pyperstudw~e |   1.089487   .0417418     2.24   0.025     1.010671     1.17445
pyperstudb~k |   1.091615   .0502833     1.90   0.057     .9973792    1.194754
pyperstudl~o |   1.062223   .0393648     1.63   0.103     .9878045    1.142247
pyperstudm~e |   .9880854   .0128954    -0.92   0.358     .9631315    1.013686
       Asian |   4.65e-07   .0009001    -0.01   0.994            0           .
       Black |   1.448465   1.461779     0.37   0.714     .2003929    10.46969
      Latino |   4.648457   3.074572     2.32   0.020     1.271478    16.99451
       Other |    1090328   1.00e+09     0.02   0.988            0           .
   AsianMale |  (omitted)
   BlackMale |   150938.3   1.46e+08     0.01   0.990            0           .
  LatinoMale |    .348944   .3314966    -1.11   0.268     .0542144    2.245933
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 17

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -585.39273
Iteration 1:   log likelihood = -514.36339
Iteration 2:   log likelihood = -511.32224
Iteration 3:   log likelihood = -511.07193
Iteration 4:   log likelihood = -511.02687
Iteration 5:   log likelihood = -511.01675
Iteration 6:   log likelihood = -511.01447
Iteration 7:   log likelihood = -511.01392
Iteration 8:   log likelihood = -511.01381
Iteration 9:   log likelihood = -511.01379

Multinomial logistic regression                 Number of obs   =        574
                                                LR chi2(34)     =     148.76
                                                Prob > chi2     =     0.0000
Log likelihood = -511.01379                     Pseudo R2       =     0.1271

------------------------------------------------------------------------------
```

```
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.017576   .0204931     0.87   0.387     .9781925    1.058545
       exper |   1.038747   .0287092     1.38   0.169     .9839749    1.096568
        male |   1.968013   .5448523     2.45   0.014     1.143851    3.385996
         age |    .961897   .0219451    -1.70   0.089     .9198329    1.005885
pyacctrati~2 |   .9011396    .148426    -0.63   0.527     .6525163    1.244494
pyperstudlep |   1.029457   .0279402     1.07   0.285     .9761261    1.085701
pyperstude~s |   .9983891   .0131476    -0.12   0.903       .97295    1.024493
pyperstudw~e |    1.01328   .0720383     0.19   0.853     .8814833    1.164783
pyperstudb~k |   .9998165   .0740363    -0.00   0.998     .8647467    1.155984
pyperstudl~o |   1.000197   .0722857     0.00   0.998     .8680966      1.1524
pyperstudm~e |   1.046632   .0170641     2.80   0.005     1.013715    1.080617
       Asian |  (omitted)
       Black |   1.351923      1.181     0.35   0.730     .2439872    7.490948
      Latino |   .9745376   .5361687    -0.05   0.963     .3315023    2.864907
       Other |   3.41e-07   .0007281    -0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |    1949761   1.65e+09     0.02   0.986            0           .
  LatinoMale |   2.695024   1.959296     1.36   0.173     .6482385    11.20444
   OtherMale |   3.889742   10743.01     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.028295    .017234     1.66   0.096     .9950661    1.062634
       exper |   1.050239   .0234119     2.20   0.028      1.00534    1.097142
        male |   3.517637   .8851644     5.00   0.000     2.148117    5.760286
         age |   .9962208    .018805    -0.20   0.841     .9600371    1.033768
pyacctrati~2 |   1.117658   .1658843     0.75   0.454     .8355501    1.495014
pyperstudlep |   1.023195   .0225488     1.04   0.298      .979941    1.068358
pyperstude~s |   1.051582   .0128245     4.12   0.000     1.026745    1.077021
pyperstudw~e |   1.087117   .0810503     1.12   0.263     .9393222    1.258165
pyperstudb~k |    1.04719   .0802132     0.60   0.547     .9012075     1.21682
pyperstudl~o |   1.061785   .0797176     0.80   0.425     .9164937     1.23011
pyperstudm~e |   .9481244   .0195497    -2.58   0.010     .9105716    .9872259
       Asian |  (omitted)
       Black |   .5579252   .6632587    -0.49   0.624      .054284    5.734298
      Latino |   .9187012   .4657149    -0.17   0.867     .3401549    2.481257
       Other |   5.74e-07   .0008841    -0.01   0.993            0           .
   AsianMale |  (omitted)
   BlackMale |     6718908   5.67e+09     0.02   0.985            0           .
  LatinoMale |   1.492201   1.071903     0.56   0.577     .3650717    6.099255
   OtherMale |    1896236   2.92e+09     0.01   0.993            0           .
------------------------------------------------------------------------------


---------->  region = 18

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -411.3358
Iteration 1:   log likelihood = -373.02568
Iteration 2:   log likelihood = -371.70983
Iteration 3:   log likelihood = -371.63633
Iteration 4:   log likelihood = -371.61963
Iteration 5:   log likelihood = -371.61614
Iteration 6:   log likelihood = -371.61542
Iteration 7:   log likelihood = -371.61526
Iteration 8:   log likelihood = -371.61522
Iteration 9:   log likelihood = -371.61521

Multinomial logistic regression                 Number of obs   =        381
                                                LR chi2(36)     =      79.44
                                                Prob > chi2     =     0.0000
Log likelihood = -371.61521                     Pseudo R2       =     0.0966
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.013648   .0231411     0.59   0.553     .9692918    1.060033
       exper |   .9632035   .0266895    -1.35   0.176     .9122881    1.016961
        male |   .9859132   .3562974    -0.04   0.969     .4855394    2.001948
         age |   1.002747    .020836     0.13   0.895     .9627294    1.044428
pyacctrati~2 |   .5949473   .1194503    -2.59   0.010     .4014013    .8818163
pyperstudlep |   .9696735   .0179591    -1.66   0.096     .9351055    1.005519
pyperstude~s |    1.02011   .0149752     1.36   0.175     .9911777    1.049888
pyperstudw~e |   .8003533   .0982238    -1.81   0.070     .6292417    1.017996
pyperstudb~k |   .8081143   .1015977    -1.69   0.090     .6316232    1.033921
pyperstudl~o |   .8036019   .0984584    -1.78   0.074     .6320488    1.021719
pyperstudm~e |   .9819771   .0219396    -0.81   0.416     .9399043    1.025933
       Asian |   3.70e-07   .0007616    -0.01   0.994            0           .
       Black |   10.33616   11.73645     2.06   0.040     1.116456    95.69235
      Latino |   2.438403   1.000362     2.17   0.030     1.091183    5.448957
       Other |   1.038348   3236.273     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   .2142318   .3040844    -1.09   0.278      .013264    3.460146
  LatinoMale |   .8285467   .5255862    -0.30   0.767      .238979    2.872594
   OtherMale |   1.340703   5909.486     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.031422   .0199867     1.60   0.110     .9929833    1.071348
       exper |   1.008583   .0265051     0.33   0.745     .9579488    1.061893
        male |   1.551978    .496473     1.37   0.169     .8290652    2.905242
         age |   .9790762   .0202899    -1.02   0.308     .9401054    1.019662
pyacctrati~2 |   1.153877    .201352     0.82   0.412     .8196421    1.624405
pyperstudlep |   .9895798   .0148353    -0.70   0.485     .9609261    1.019088
pyperstude~s |   1.049672    .014498     3.51   0.000     1.021637    1.078476
pyperstudw~e |   .9226823   .1051931    -0.71   0.480     .7379186    1.153708
pyperstudb~k |    .889072    .105726    -0.99   0.323     .7042297    1.122431
pyperstudl~o |    .890009   .1021025    -1.02   0.310     .7107942     1.11441
pyperstudm~e |   .9643015   .0235166    -1.49   0.136     .9192939    1.011513
       Asian |   2.62e-07   .0004649    -0.01   0.993            0           .
       Black |   4.659393   5.896573     1.22   0.224     .3900438    55.66027
      Latino |   .9510901   .3756647    -0.13   0.899      .438542    2.062681
       Other |    2758880   5.31e+09     0.01   0.994            0           .
   AsianMale |  (omitted)
   BlackMale |   .0834915   .1459939    -1.42   0.156     .0027116    2.570753
  LatinoMale |   2.004166   1.190115     1.17   0.242     .6258533    6.417927
   OtherMale |   2.318128   6306.523     0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  region = 19

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -928.5307
Iteration 1:   log likelihood = -865.78144
Iteration 2:   log likelihood = -863.36046
Iteration 3:   log likelihood =  -863.2166
Iteration 4:   log likelihood = -863.18764
Iteration 5:   log likelihood = -863.18155
Iteration 6:   log likelihood =  -863.1802
Iteration 7:   log likelihood = -863.17986
Iteration 8:   log likelihood =  -863.1798
Iteration 9:   log likelihood = -863.17978

Multinomial logistic regression                 Number of obs   =        863
                                                LR chi2(36)     =     130.70
                                                Prob > chi2     =     0.0000
Log likelihood = -863.17978                     Pseudo R2       =     0.0704
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.001708   .0137062     0.12   0.901     .9752009    1.028935
       exper |   1.052904   .0185367     2.93   0.003     1.017192    1.089869
        male |   .9537152   .3039238    -0.15   0.882      .510697    1.781042
         age |   .9794101   .0127963    -1.59   0.111     .9546482    1.004814
pyacctrati~2 |   1.026623   .1190204     0.23   0.821     .8179517    1.288528
pyperstudlep |      1.001    .005858     0.17   0.864     .9895837    1.012547
pyperstude~s |   .9873686   .0096667    -1.30   0.194     .9686029    1.006498
pyperstudw~e |   .9092154   .0869266    -1.00   0.320     .7538529    1.096597
pyperstudb~k |   1.006388   .0938577     0.07   0.946     .8382634    1.208231
pyperstudl~o |   .9510373   .0808834    -0.59   0.555     .8050168    1.123544
pyperstudm~e |   1.004607   .0131816     0.35   0.726     .9791008    1.030778
       Asian |   5.09e-07   .0007396    -0.01   0.992            0           .
       Black |   1.235789   .5508869     0.47   0.635     .5158194    2.960676
      Latino |   1.277152   .3052697     1.02   0.306     .7994384    2.040328
       Other |   1.231227   1.172201     0.22   0.827     .1905213    7.956693
   AsianMale |  (omitted)
   BlackMale |   1.542923   1.309962     0.51   0.609     .2921883    8.147522
  LatinoMale |   1.166904   .4385746     0.41   0.681     .5586187    2.437556
   OtherMale |   3.247643   5.109699     0.75   0.454     .1487049    70.92696
-------------+----------------------------------------------------------------
3            |
      tenure |    .983918   .0143232    -1.11   0.265     .9562416    1.012395
       exper |   1.147573    .024595     6.42   0.000     1.100366    1.196805
        male |    .871084   .3132781    -0.38   0.701     .4304596    1.762737
         age |   .9575712   .0165939    -2.50   0.012     .9255939    .9906533
pyacctrati~2 |   1.340458   .1831483     2.14   0.032      1.02554     1.75208
pyperstudlep |   1.016549   .0066329     2.52   0.012     1.003632    1.029633
pyperstude~s |   1.018768   .0112294     1.69   0.092     .9969946    1.041017
pyperstudw~e |   .9664719    .093099    -0.35   0.723     .8001918    1.167305
pyperstudb~k |    .916453   .0934718    -0.86   0.392     .7504014    1.119249
pyperstudl~o |   .9233024   .0826389    -0.89   0.373     .7747443    1.100347
pyperstudm~e |   1.006656   .0147811     0.45   0.651     .9780988    1.036047
       Asian |   5.36e-07   .0009645    -0.01   0.994            0           .
       Black |   .3502295     .24416    -1.50   0.132      .089319    1.373289
      Latino |   .8749218   .2332631    -0.50   0.616     .5188361    1.475395
       Other |   4.52e-06   .0026199    -0.02   0.983            0           .
   AsianMale |  (omitted)
   BlackMale |   1.842484   2.510106     0.45   0.654     .1275764    26.60952
  LatinoMale |   1.422186   .6154554     0.81   0.416     .6089708    3.321364
   OtherMale |    1656231   9.60e+08     0.02   0.980            0           .
------------------------------------------------------------------------------


--------->  region = 20

Iteration 0:   log likelihood = -2196.0008
Iteration 1:   log likelihood =  -2099.304
Iteration 2:   log likelihood = -2096.7838
Iteration 3:   log likelihood =  -2096.646
Iteration 4:   log likelihood = -2096.6156
Iteration 5:   log likelihood = -2096.6092
Iteration 6:   log likelihood = -2096.6081
Iteration 7:   log likelihood =  -2096.608
Iteration 8:   log likelihood =  -2096.608

Multinomial logistic regression                 Number of obs   =       2111
                                                LR chi2(38)     =     198.79
                                                Prob > chi2     =     0.0000
Log likelihood =  -2096.608                     Pseudo R2       =     0.0453
```

```
------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9909531   .0079038    -1.14   0.255     .9755823    1.006566
       exper |   1.024838    .010575     2.38   0.017     1.004319    1.045775
        male |   1.377735   .2098659     2.10   0.035     1.022127    1.857062
         age |   .9781279    .008379    -2.58   0.010     .9618424    .9946891
pyacctrati~2 |   .9360916   .0714013    -0.87   0.387     .8061059    1.087038
pyperstudlep |   .9928359   .0066626    -1.07   0.284     .9798628    1.005981
pyperstude~s |   1.003184    .005376     0.59   0.553     .9927021    1.013776
pyperstudw~e |   .9876564   .0289444    -0.42   0.672     .9325249    1.046047
pyperstudb~k |    .987306   .0318541    -0.40   0.692     .9268062    1.051755
pyperstudl~o |   .9865161    .029782    -0.45   0.653     .9298378    1.046649
pyperstudm~e |    1.00332   .0082689     0.40   0.688     .9872434    1.019658
       Asian |   .7599913   .6432862    -0.32   0.746       .14465    3.992994
       Black |    .883629   .2741398    -0.40   0.690     .4810504    1.623115
      Latino |   1.301157   .1875442     1.83   0.068     .9809359    1.725913
       Other |   .4977703   .3969028    -0.87   0.382     .1043071    2.375441
   AsianMale |   3.744021   5.620907     0.88   0.379     .1974365    70.99848
   BlackMale |   2.144035    .986245     1.66   0.097     .8703288    5.281778
  LatinoMale |   1.100523   .2480746     0.42   0.671     .7074979    1.711878
   OtherMale |   .4905289   .6631668    -0.53   0.598     .0346648    6.941286
-------------+----------------------------------------------------------------
3            |
      tenure |   1.010052   .0083603     1.21   0.227      .993798    1.026571
       exper |   1.074197   .0134175     5.73   0.000     1.048218    1.100819
        male |   1.251675   .2188806     1.28   0.199     .8884684    1.763362
         age |   .9684142   .0105579    -2.94   0.003     .9479406    .9893299
pyacctrati~2 |   1.266324   .1073757     2.78   0.005     1.072429    1.495275
pyperstudlep |   1.012574   .0065673     1.93   0.054     .9997839    1.025528
pyperstude~s |    1.01844   .0061453     3.03   0.002     1.006467    1.030556
pyperstudw~e |    1.03971     .03527     1.15   0.251     .9728302    1.111188
pyperstudb~k |   1.025303   .0382418     0.67   0.503     .9530242    1.103063
pyperstudl~o |   1.022505   .0357895     0.64   0.525     .9547109    1.095113
pyperstudm~e |   1.005388   .0093958     0.57   0.565     .9871401    1.023973
       Asian |   .8382047   .7223251    -0.20   0.838     .1548192    4.538113
       Black |   1.582585   .4655354     1.56   0.119     .8891532    2.816811
      Latino |    .937137   .1521148    -0.40   0.689     .6817689    1.288158
       Other |   .7697246   .6252311    -0.32   0.747     .1566471    3.782235
   AsianMale |   5.771252   9.756183     1.04   0.300     .2100542    158.5655
   BlackMale |   1.064408   .5439163     0.12   0.903     .3909678    2.897845
  LatinoMale |   .9829996   .2662434    -0.06   0.950     .5781056    1.671473
   OtherMale |   2.63e-06   .0011489    -0.03   0.977            0           .
------------------------------------------------------------------------------
```

by pyschooltype:

```
. bysort pyschooltype: mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian
Black Latino
> Other AsianMale BlackMale LatinoMale OtherMale if validcert2010a==1, rrr iter(20)


---------->  pyschooltype =
no observations


---------->  pyschooltype = B

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -396.54563
Iteration 1:   log likelihood = -367.65442
```

```
Iteration 2:   log likelihood =  -359.3985
Iteration 3:   log likelihood = -359.00058
Iteration 4:   log likelihood = -358.97492
Iteration 5:   log likelihood = -358.96955
Iteration 6:   log likelihood = -358.96842
Iteration 7:   log likelihood = -358.96817
Iteration 8:   log likelihood = -358.96811
Iteration 9:   log likelihood =  -358.9681

Multinomial logistic regression                 Number of obs   =        448
                                                LR chi2(34)     =      75.16
                                                Prob > chi2     =     0.0001
Log likelihood =  -358.9681                     Pseudo R2       =     0.0948

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.013998   .0326581     0.43   0.666     .9519677     1.08007
       exper |   1.000207   .0409418     0.01   0.996     .9230966    1.083758
        male |    1.20598   .5384082     0.42   0.675     .5027157    2.893063
         age |   .9572501   .0315596    -1.33   0.185     .8973506    1.021148
pyacctrati~2 |   .6320808   .1718304    -1.69   0.092     .3710005    1.076888
pyperstudlep |   1.011682    .023226     0.51   0.613     .9671688    1.058244
pyperstude~s |    .968894   .0143567    -2.13   0.033       .94116    .9974452
pyperstudw~e |    .956388   .0322615    -1.32   0.186     .8952015    1.021757
pyperstudb~k |   .9967027   .0340567    -0.10   0.923     .9321388    1.065739
pyperstudl~o |   .9867976   .0340428    -0.39   0.700     .9222807    1.055828
pyperstudm~e |   .9252961   .0341826    -2.10   0.036     .8606674    .9947779
       Asian |  (omitted)
       Black |   1.941736   1.819921     0.71   0.479     .3093064    12.18966
      Latino |   2.381812   2.073186     1.00   0.319     .4325148    13.11638
       Other |   2.107475   6623.998     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |    .627434   .9807742    -0.30   0.766     .0293097    13.43151
  LatinoMale |   .8214405   .8934348    -0.18   0.856     .0974478    6.924371
   OtherMale |   1.114718   4169.311     0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9684036   .0160294    -1.94   0.052     .9374908    1.000336
       exper |   1.014031   .0186534     0.76   0.449     .9781226    1.051259
        male |   1.380742   .3279532     1.36   0.174      .866833    2.199326
         age |   1.000108    .016672     0.01   0.995     .9679596    1.033324
pyacctrati~2 |    .863851   .1358096    -0.93   0.352     .6347723    1.175601
pyperstudlep |   1.003368    .014637     0.23   0.818      .975086     1.03247
pyperstude~s |   .9965132   .0089459    -0.39   0.697     .9791329    1.014202
pyperstudw~e |   1.012248   .0317884     0.39   0.698     .9518225    1.076509
pyperstudb~k |   1.008673   .0325746     0.27   0.789     .9468062    1.074581
pyperstudl~o |   1.022763   .0325239     0.71   0.479      .960963    1.088537
pyperstudm~e |     .95677   .0206984    -2.04   0.041       .91705    .9982104
       Asian |  (omitted)
       Black |   1.684348   1.376794     0.64   0.524     .3393562    8.360029
      Latino |   1.615218   1.053936     0.73   0.462     .4495925    5.802875
       Other |    2170797   2.44e+09     0.01   0.990            0           .
   AsianMale |  (omitted)
   BlackMale |   .5834093   .7052373    -0.45   0.656     .0545787     6.23625
  LatinoMale |    .616247   .5273097    -0.57   0.572     .1151859    3.296934
   OtherMale |   1.065576   1465.392     0.00   1.000            0           .
------------------------------------------------------------------------------


---------->  pyschooltype = E

Iteration 0:   log likelihood = -12760.375
Iteration 1:   log likelihood = -12028.949
```

```
Iteration 2:   log likelihood = -12020.827
Iteration 3:   log likelihood =  -12020.82
Iteration 4:   log likelihood =  -12020.82

Multinomial logistic regression                 Number of obs   =      11771
                                                LR chi2(38)     =    1479.11
                                                Prob > chi2     =     0.0000
Log likelihood =  -12020.82                     Pseudo R2       =     0.0580

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.011451   .0042034     2.74   0.006     1.003245    1.019723
       exper |   1.024565   .0053006     4.69   0.000     1.014228    1.035007
        male |   1.550828   .1300497     5.23   0.000      1.31578    1.827864
         age |   .9772505   .0037724    -5.96   0.000     .9698848    .9846723
pyacctrati~2 |   .9141863    .033044    -2.48   0.013     .8516622    .9813005
pyperstudlep |   1.004028   .0016616     2.43   0.015     1.000777     1.00729
pyperstude~s |   .9922024   .0020191    -3.85   0.000      .988253    .9961676
pyperstudw~e |   .9976641   .0043842    -0.53   0.595     .9891082    1.006294
pyperstudb~k |   .9937944   .0051113    -1.21   0.226     .9838267    1.003863
pyperstudl~o |   .9997097   .0046586    -0.06   0.950     .9906206    1.008882
pyperstudm~e |   1.009698   .0037458     2.60   0.009     1.002383    1.017067
       Asian |   .6272229   .2069898    -1.41   0.158      .328486    1.197642
       Black |   1.037619   .0907457     0.42   0.673     .8741689     1.23163
      Latino |   1.158701   .0819789     2.08   0.037     1.008668    1.331051
       Other |   1.203002   .3010515     0.74   0.460     .7366359    1.964625
   AsianMale |   1.301282   .8813031     0.39   0.697     .3450553     4.90743
   BlackMale |   1.099401   .2112869     0.49   0.622      .754343    1.602297
  LatinoMale |   .7094774   .0976337    -2.49   0.013     .5417535    .9291277
   OtherMale |   .4258058   .3154893    -1.15   0.249     .0996636    1.819225
-------------+----------------------------------------------------------------
3            |
      tenure |    1.01571   .0036964     4.28   0.000     1.008491    1.022981
       exper |    1.08631    .005408    16.63   0.000     1.075762    1.096961
        male |    2.36122   .1819907    11.15   0.000      2.03016    2.746267
         age |    .981562   .0039096    -4.67   0.000      .973929    .9892547
pyacctrati~2 |   .9374321   .0336713    -1.80   0.072      .873707    1.005805
pyperstudlep |   .9958417   .0016517    -2.51   0.012     .9926098    .9990842
pyperstude~s |   1.003129    .001977     1.59   0.113     .9992614    1.007011
pyperstudw~e |   1.009234   .0047033     1.97   0.049     1.000057    1.018494
pyperstudb~k |   .9967662   .0053665    -0.60   0.547     .9863035     1.00734
pyperstudl~o |   1.004255    .004939     0.86   0.388     .9946215    1.013982
pyperstudm~e |   1.003943    .003787     1.04   0.297     .9965482    1.011393
       Asian |   .8324829   .2902429    -0.53   0.599     .4203453    1.648711
       Black |   .9747938   .0873428    -0.28   0.776     .8177942    1.161934
      Latino |   .9723098   .0706775    -0.39   0.699     .8431999    1.121189
       Other |   1.072114   .2862362     0.26   0.794     .6353082    1.809244
   AsianMale |   1.114722   .7334801     0.17   0.869     .3069598    4.048105
   BlackMale |   .7132908    .140321    -1.72   0.086     .4850823    1.048861
  LatinoMale |    .589983   .0803142    -3.88   0.000     .4518203    .7703946
   OtherMale |   .5162163    .354407    -0.96   0.335     .1344131     1.98254
------------------------------------------------------------------------------


---------->  pyschooltype = M

Iteration 0:   log likelihood =  -6890.908
Iteration 1:   log likelihood = -6563.3591
Iteration 2:   log likelihood = -6554.4387
Iteration 3:   log likelihood = -6554.4049
Iteration 4:   log likelihood = -6554.4049

Multinomial logistic regression                 Number of obs   =       6606
```

```
                                                LR chi2(38)     =     673.01
                                                Prob > chi2     =     0.0000
Log likelihood = -6554.4049                     Pseudo R2       =     0.0488

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.005645   .0048945     1.16   0.247     .9960974    1.015284
       exper |   1.026391   .0059915     4.46   0.000     1.014715    1.038202
        male |   1.597812   .1200371     6.24   0.000     1.379045    1.851284
         age |   .9785576   .0045184    -4.69   0.000     .9697417    .9874537
pyacctrati~2 |   .8895752   .0404438    -2.57   0.010      .813736    .9724825
pyperstudlep |   1.008004   .0035985     2.23   0.026     1.000975    1.015081
pyperstude~s |    .995462   .0026787    -1.69   0.091     .9902255    1.000726
pyperstudw~e |   .9962285   .0062597    -0.60   0.548     .9840349    1.008573
pyperstudb~k |   .9996877   .0072802    -0.04   0.966     .9855201    1.014059
pyperstudl~o |    .997244   .0067889    -0.41   0.685     .9840264    1.010639
pyperstudm~e |   1.005927   .0045562     1.30   0.192     .9970367    1.014897
       Asian |   1.393171   .6219881     0.74   0.458     .5807392    3.342163
       Black |   1.110443   .1142772     1.02   0.309     .9076069    1.358609
      Latino |   1.676834   .1818305     4.77   0.000     1.355777    2.073918
       Other |   .5378856   .1941426    -1.72   0.086     .2651307    1.091239
   AsianMale |   .3983724   .2646617    -1.39   0.166     .1083396    1.464844
   BlackMale |   1.134735   .1842707     0.78   0.436     .8254045     1.55999
  LatinoMale |   1.015095   .1523652     0.10   0.920     .7563826    1.362296
   OtherMale |   2.445773   1.256981     1.74   0.082      .893201    6.697041
-------------+----------------------------------------------------------------
3            |
      tenure |   1.012133   .0052534     2.32   0.020     1.001889    1.022482
       exper |    1.09398   .0080712    12.17   0.000     1.078274    1.109914
        male |   2.198702   .1877415     9.23   0.000     1.859878    2.599251
         age |   .9547332   .0060958    -7.26   0.000     .9428601    .9667559
pyacctrati~2 |   .9404754   .0512331    -1.13   0.260     .8452352    1.046447
pyperstudlep |   .9942594   .0045998    -1.24   0.213     .9852848    1.003316
pyperstude~s |   1.010418   .0031959     3.28   0.001     1.004174    1.016701
pyperstudw~e |   1.014301   .0086166     1.67   0.095     .9975523     1.03133
pyperstudb~k |   .9989611   .0098204    -0.11   0.916     .9798976    1.018395
pyperstudl~o |   1.000851   .0091318     0.09   0.926     .9831121     1.01891
pyperstudm~e |   1.003481   .0055799     0.62   0.532     .9926039    1.014477
       Asian |   1.876306   .9699802     1.22   0.223     .6811838    5.168245
       Black |   .7744033   .1139139    -1.74   0.082     .5804387    1.033185
      Latino |   1.601156   .2174294     3.47   0.001        1.227    2.089406
       Other |   1.068667   .3966447     0.18   0.858     .5163116    2.211938
   AsianMale |   .1919584   .1770332    -1.79   0.074     .0314911    1.170108
   BlackMale |   1.312724   .2791701     1.28   0.201     .8652725    1.991563
  LatinoMale |   .8174659   .1483836    -1.11   0.267     .5727465    1.166747
   OtherMale |   .6569705    .396064    -0.70   0.486     .2015519    2.141435
------------------------------------------------------------------------------


---------> pyschooltype = S

Iteration 0:   log likelihood = -7786.4709
Iteration 1:   log likelihood = -7472.4486
Iteration 2:   log likelihood = -7459.2749
Iteration 3:   log likelihood = -7458.9725
Iteration 4:   log likelihood = -7458.9069
Iteration 5:   log likelihood = -7458.8916
Iteration 6:   log likelihood = -7458.8884
Iteration 7:   log likelihood = -7458.8879
Iteration 8:   log likelihood = -7458.8878
Iteration 9:   log likelihood = -7458.8878

Multinomial logistic regression                 Number of obs   =       8194
```

```
                                                LR chi2(38)     =     655.17
                                                Prob > chi2     =     0.0000
Log likelihood = -7458.8878                     Pseudo R2       =     0.0421

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.008628   .0037563     2.31   0.021     1.001293    1.016017
       exper |   1.011773   .0047446     2.50   0.013     1.002516    1.021115
        male |   1.122131   .0702439     1.84   0.066     .9925662    1.268609
         age |   .9781214   .0038857    -5.57   0.000     .9705352    .9857668
pyacctrati~2 |   .9412025   .0373802    -1.53   0.127     .8707176    1.017393
pyperstudlep |   1.018651   .0045833     4.11   0.000     1.009708    1.027674
pyperstude~s |   .9882909   .0021696    -5.37   0.000     .9840477    .9925523
pyperstudw~e |   .9989846   .0055172    -0.18   0.854     .9882295    1.009857
pyperstudb~k |   1.004942   .0063387     0.78   0.434      .992595    1.017443
pyperstudl~o |    1.00463    .005961     0.78   0.436     .9930145    1.016382
pyperstudm~e |   1.000655   .0036205     0.18   0.856     .9935839    1.007776
       Asian |   1.427116   .5524701     0.92   0.358     .6682504     3.04775
       Black |   1.460998   .1470292     3.77   0.000     1.199466    1.779555
      Latino |   1.829978   .1862732     5.94   0.000     1.499002    2.234033
       Other |   .9361736    .317262    -0.19   0.846     .4818266    1.818955
   AsianMale |   .5180806   .3244372    -1.05   0.294     .1518274    1.767846
   BlackMale |   1.655443   .2376855     3.51   0.000     1.249396    2.193452
  LatinoMale |   1.091524   .1436443     0.67   0.506     .8433645    1.412704
   OtherMale |   .7488541    .367534    -0.59   0.556     .2861749    1.959579
-------------+----------------------------------------------------------------
3            |
      tenure |   .9961002    .004668    -0.83   0.404      .986993    1.005291
       exper |   1.078042   .0079989    10.13   0.000     1.062478    1.093834
        male |   1.967379   .1784112     7.46   0.000     1.647013     2.35006
         age |   .9578994   .0066157    -6.23   0.000     .9450203    .9709541
pyacctrati~2 |   1.095614   .0629365     1.59   0.112     .9789518     1.22618
pyperstudlep |   .9945335   .0073874    -0.74   0.461     .9801594    1.009118
pyperstude~s |   1.013772   .0030345     4.57   0.000     1.007842    1.019737
pyperstudw~e |   1.023383   .0098815     2.39   0.017     1.004197    1.042934
pyperstudb~k |   1.013307   .0109893     1.22   0.223     .9919958    1.035076
pyperstudl~o |   1.010921   .0103227     1.06   0.287     .9908895    1.031357
pyperstudm~e |   .9892018   .0056942    -1.89   0.059      .978104    1.000425
       Asian |   .5193551    .539249    -0.63   0.528     .0678668    3.974396
       Black |   .9335803   .1825114    -0.35   0.725     .6364217    1.369488
      Latino |   1.635219   .2742183     2.93   0.003     1.177155    2.271529
       Other |   .3097375   .3166559    -1.15   0.252     .0417618    2.297249
   AsianMale |   1.85e-06   .0011427    -0.02   0.983            0           .
   BlackMale |   1.620367   .3976885     1.97   0.049     1.001618    2.621349
  LatinoMale |   .8681401    .174543    -0.70   0.482     .5853995    1.287441
   OtherMale |   5.258697   5.687797     1.53   0.125     .6312773    43.80626
------------------------------------------------------------------------------
```

2010-11

```
mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep pyperstudecodis
pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian Black Latino Other
AsianMale Black
> Male LatinoMale OtherMale if validcert2011a==1, rrr iter(20)

Iteration 0:   log likelihood = -28183.668
Iteration 1:   log likelihood = -26997.724
Iteration 2:   log likelihood = -26978.087
Iteration 3:   log likelihood = -26978.062
Iteration 4:   log likelihood = -26978.062

Multinomial logistic regression                 Number of obs   =      26437
                                                LR chi2(38)     =    2411.21
```

```
                                                Prob > chi2     =     0.0000
Log likelihood = -26978.062                     Pseudo R2       =     0.0428

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.013975   .0024487     5.75   0.000     1.009187    1.018785
       exper |   1.011743   .0029668     3.98   0.000     1.005945    1.017575
        male |   1.221507   .0480661     5.08   0.000     1.130841    1.319443
         age |   .9769446   .0022749   -10.02   0.000     .9724959    .9814136
pyacctrati~2 |   .9525619   .0206225    -2.24   0.025      .912988    .9938511
pyperstudlep |   1.003834     .00114     3.37   0.001     1.001603    1.006071
pyperstude~s |   .9933524   .0012286    -5.39   0.000     .9909473    .9957633
pyperstudw~e |   .9934118   .0028598    -2.30   0.022     .9878224    .9990328
pyperstudb~k |   .9949405   .0033273    -1.52   0.129     .9884404    1.001483
pyperstudl~o |   .9974843   .0030747    -0.82   0.414     .9914762    1.003529
pyperstudm~e |   1.006881   .0023209     2.98   0.003     1.002343    1.011441
       Asian |   .8956567   .1881489    -0.52   0.600     .5933777    1.351923
       Black |   1.162664    .064609     2.71   0.007     1.042685    1.296449
      Latino |    1.41118   .0716152     6.79   0.000     1.277572    1.558761
       Other |   .6503471   .1151514    -2.43   0.015     .4596532    .9201532
   AsianMale |   1.926196   .7132152     1.77   0.077     .9322338    3.979935
   BlackMale |   1.535417   .1414034     4.66   0.000     1.281845    1.839151
  LatinoMale |   1.213712   .0933049     2.52   0.012     1.043949    1.411083
   OtherMale |   1.809144    .527224     2.03   0.042     1.021915    3.202815
-------------+----------------------------------------------------------------
3            |
      tenure |   1.017016   .0024032     7.14   0.000     1.012317    1.021737
       exper |   1.066657    .003502    19.65   0.000     1.059815    1.073543
        male |    1.38212   .0573586     7.80   0.000     1.274149    1.499239
         age |   .9721245   .0027279   -10.07   0.000     .9667926    .9774858
pyacctrati~2 |   1.264224   .0303091     9.78   0.000     1.206194    1.325047
pyperstudlep |      1.009    .001237     7.31   0.000     1.006579    1.011427
pyperstude~s |   1.017108   .0013611    12.68   0.000     1.014444    1.019779
pyperstudw~e |   1.005195    .003371     1.55   0.122       .99861    1.011824
pyperstudb~k |   .9908475   .0038607    -2.36   0.018     .9833094    .9984433
pyperstudl~o |    .989712   .0035334    -2.90   0.004     .9828109    .9966616
pyperstudm~e |   .9969762   .0027415    -1.10   0.271     .9916174    1.002364
       Asian |   .7719864   .1961537    -1.02   0.308     .4691678    1.270255
       Black |   .8552858   .0569496    -2.35   0.019     .7506433    .9745159
      Latino |    1.11982   .0640459     1.98   0.048     1.001072    1.252654
       Other |    .768359   .1446263    -1.40   0.162      .531306    1.111178
   AsianMale |   1.285531     .62195     0.52   0.604     .4980407    3.318185
   BlackMale |   1.311301   .1482438     2.40   0.017     1.050687    1.636559
  LatinoMale |   1.064569   .0933018     0.71   0.475     .8965447    1.264082
   OtherMale |   1.527682    .484083     1.34   0.181     .8209361    2.842869
------------------------------------------------------------------------------

. mlogtest, all

**** Likelihood-ratio tests for independent variables (N=26437)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+--------------------------
      tenure |     60.894    2    0.000
       exper |    420.359    2    0.000
        male |     66.773    2    0.000
         age |    158.202    2    0.000
pyacctrati~2 |    136.314    2    0.000
pyperstudlep |     53.672    2    0.000
pyperstude~s |    281.120    2    0.000
pyperstudw~e |     11.930    2    0.003
```

```
pyperstudb~k |      6.046    2    0.049
pyperstudl~o |      8.310    2    0.016
pyperstudm~e |     14.377    2    0.001
       Asian |      1.120    2    0.571
       Black |     19.263    2    0.000
      Latino |     46.313    2    0.000
       Other |      6.749    2    0.034
   AsianMale |      3.174    2    0.205
   BlackMale |     22.240    2    0.000
  LatinoMale |      6.511    2    0.039
   OtherMale |      4.648    2    0.098
-------------------------------------

**** Wald tests for independent variables (N=26437)

 Ho: All coefficients associated with given variable(s) are 0.

             |       chi2   df   P>chi2
-------------+-------------------------
      tenure |     60.784    2    0.000
       exper |    392.747    2    0.000
        male |     66.660    2    0.000
         age |    155.423    2    0.000
pyacctrati~2 |    134.890    2    0.000
pyperstudlep |     53.579    2    0.000
pyperstude~s |    274.889    2    0.000
pyperstudw~e |     11.946    2    0.003
pyperstudb~k |      6.060    2    0.048
pyperstudl~o |      8.468    2    0.014
pyperstudm~e |     14.433    2    0.001
       Asian |      1.093    2    0.579
       Black |     19.189    2    0.000
      Latino |     46.484    2    0.000
       Other |      6.547    2    0.038
   AsianMale |      3.154    2    0.207
   BlackMale |     22.059    2    0.000
  LatinoMale |      6.508    2    0.039
   OtherMale |      4.608    2    0.100
-------------------------------------

**** Hausman tests of IIA assumption (N=26437)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |      chi2   df   P>chi2   evidence
---------+----------------------------------
       2 |   -91.876   19     ---    ---
       3 |     5.198   19    0.999   for Ho
-------------------------------------------
 Note: If chi2<0, the estimated model does not
 meet asymptotic assumptions of the test.

**** Small-Hsiao tests of IIA assumption (N=26437)

 Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

 Omitted |  lnL(full)  lnL(omit)    chi2   df   P>chi2   evidence
---------+--------------------------------------------------------
       2 |  -5526.373  -5515.467  21.813   20    0.351   for Ho
       3 |  -6580.084  -6573.874  12.418   20    0.901   for Ho
-----------------------------------------------------------------

**** Wald tests for combining alternatives (N=26437)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be combined).
```

```
Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1406.910   19    0.000
       2-       1  |  493.954   19    0.000
       3-       1  | 1531.835   19    0.000
-------------------------------------------

**** LR tests for combining alternatives (N=26437)

 Ho: All coefficients except intercepts associated with a given pair
     of alternatives are 0 (i.e., alternatives can be collapsed).

Alternatives tested|     chi2   df   P>chi2
-------------------+------------------------
       2-       3  | 1540.008   19    0.000
       2-       1  |  508.739   19    0.000
       3-       1  | 1687.182   19    0.000
-------------------------------------------

by region:

. bysort region: mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian
Black Latino Other
> AsianMale BlackMale LatinoMale OtherMale if validcert2011a==1, rrr iter(20)


---------->  region = 1

note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -2015.1404
Iteration 1:   log likelihood = -1917.6324
Iteration 2:   log likelihood = -1914.8399
Iteration 3:   log likelihood = -1914.5066
Iteration 4:   log likelihood = -1914.4519
Iteration 5:   log likelihood = -1914.4462
Iteration 6:   log likelihood =  -1914.445
Iteration 7:   log likelihood = -1914.4447
Iteration 8:   log likelihood = -1914.4447

Multinomial logistic regression                 Number of obs   =       1864
                                                LR chi2(36)     =     201.39
                                                Prob > chi2     =     0.0000
Log likelihood = -1914.4447                     Pseudo R2       =     0.0500

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.020146   .0091006     2.24   0.025     1.002464     1.03814
       exper |   1.003958   .0121449     0.33   0.744     .9804345    1.028046
        male |    .891176   .3072857    -0.33   0.738     .4533789    1.751724
         age |   .9673449   .0098378    -3.26   0.001     .9482541      .98682
pyacctrati~2 |   .9153526   .0744588    -1.09   0.277     .7804552    1.073566
pyperstudlep |   1.002514   .0026963     0.93   0.351     .9972429    1.007812
pyperstude~s |   1.003255   .0053537     0.61   0.543     .9928162    1.013803
pyperstudw~e |   .9795813   .0546204    -0.37   0.711     .8781695    1.092704
pyperstudb~k |   .8428201   .1149265    -1.25   0.210     .6451571    1.101043
pyperstudl~o |   .9754765   .0460198    -0.53   0.599     .8893238    1.069975
pyperstudm~e |   1.006638   .0101387     0.66   0.511     .9869618    1.026707
       Asian |   .6738951   .6053972    -0.44   0.660      .115854    3.919889
       Black |   .5896797    .699115    -0.45   0.656     .0577358    6.022647
      Latino |   1.381213   .3042649     1.47   0.143     .8969149    2.127014
       Other |   .3199133   .3577743    -1.02   0.308      .035735    2.863989
   AsianMale |   1.13e-06    .002047    -0.01   0.994            0           .
```

```
   BlackMale |   16.99732   28.20931     1.71   0.088     .6572014    439.6048
  LatinoMale |   1.764366   .6458541     1.55   0.121     .8609984    3.615554
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.018595    .009236     2.03   0.042     1.000653    1.036859
       exper |   1.095329   .0170562     5.85   0.000     1.062405    1.129274
        male |   .6834323    .243452    -1.07   0.285     .3400015    1.373758
         age |   .9330392   .0131657    -4.91   0.000     .9075885    .9592035
pyacctrati~2 |   1.126695   .1054051     1.28   0.202     .9379386    1.353438
pyperstudlep |   1.015037    .003055     4.96   0.000     1.009067    1.021042
pyperstude~s |   .9988244   .0060943    -0.19   0.847     .9869509    1.010841
pyperstudw~e |   1.026134   .0641926     0.41   0.680      .907726    1.159987
pyperstudb~k |   .8727653    .125938    -0.94   0.346     .6577655    1.158041
pyperstudl~o |   1.007458   .0529027     0.14   0.887     .9089282    1.116669
pyperstudm~e |   .9910214   .0120778    -0.74   0.459     .9676298    1.014978
       Asian |   8.88e-07   .0005819    -0.02   0.983            0           .
       Black |   6.12e-07   .0005279    -0.02   0.987            0           .
      Latino |   .7234146   .1556425    -1.50   0.132     .4745165    1.102867
       Other |   .3766887    .335218    -1.10   0.273     .0658404    2.155128
   AsianMale |   4.165854    9711.84     0.00   1.000            0           .
   BlackMale |   14.21118   16383.61     0.00   0.998            0           .
  LatinoMale |   2.021089   .7788516     1.83   0.068     .9496519    4.301366
   OtherMale |  (omitted)
------------------------------------------------------------------------------


---------->  region = 2

Iteration 0:   log likelihood = -723.72095
Iteration 1:   log likelihood =  -682.9685
Iteration 2:   log likelihood = -680.89563
Iteration 3:   log likelihood = -680.51304
Iteration 4:   log likelihood = -680.43539
Iteration 5:   log likelihood = -680.41861
Iteration 6:   log likelihood = -680.41506
Iteration 7:   log likelihood = -680.41425
Iteration 8:   log likelihood = -680.41412
Iteration 9:   log likelihood = -680.41409
Iteration 10:  log likelihood = -680.41408

Multinomial logistic regression                 Number of obs   =        687
                                                LR chi2(38)     =      86.61
                                                Prob > chi2     =     0.0000
Log likelihood = -680.41408                     Pseudo R2       =     0.0598

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.015154   .0149263     1.02   0.306     .9863167    1.044835
       exper |   .9884042    .018027    -0.64   0.522      .953696    1.024376
        male |   1.511341   .4323451     1.44   0.149      .862704    2.647667
         age |   .9864324   .0141576    -0.95   0.341     .9590707    1.014575
pyacctrati~2 |   1.109991   .1645611     0.70   0.482     .8300897    1.484273
pyperstudlep |   1.006516   .0203871     0.32   0.748     .9673406    1.047278
pyperstude~s |   1.000099   .0074636     0.01   0.989     .9855772    1.014835
pyperstudw~e |   .9520433    .054571    -0.86   0.391     .8508752     1.06524
pyperstudb~k |   .9204662   .0640249    -1.19   0.233     .8031576    1.054909
pyperstudl~o |   .9526072    .052323    -0.88   0.377     .8553832    1.060882
pyperstudm~e |   1.006782   .0137421     0.50   0.620     .9802056     1.03408
       Asian |   1.070879   1.341496     0.05   0.956     .0919254    12.47514
       Black |   1.302671   1.184457     0.29   0.771     .2192184    7.740912
      Latino |   1.174086   .3035529     0.62   0.535     .7073378    1.948826
       Other |   3.21e-07   .0008322    -0.01   0.995            0           .
```

```
   AsianMale |   9.99e-08   .0002878    -0.01   0.996           0           .
   BlackMale |   1.39e-07    .000233    -0.01   0.992           0           .
  LatinoMale |   1.231947    .491973     0.52   0.601     .5632069    2.694734
   OtherMale |    1335758   3.47e+09     0.01   0.996           0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.025626   .0144005     1.80   0.072     .9977864    1.054242
       exper |   .9918862    .018201    -0.44   0.657     .9568468    1.028209
        male |   .7940731   .2575351    -0.71   0.477     .4205303    1.499421
         age |   1.012195   .0153651     0.80   0.425     .9825236    1.042763
pyacctrati~2 |   1.608683   .2469924     3.10   0.002     1.190638    2.173509
pyperstudlep |   1.011703   .0196812     0.60   0.550     .9738545    1.051022
pyperstude~s |   1.016322   .0085305     1.93   0.054     .9997397     1.03318
pyperstudw~e |    1.20303   .0927857     2.40   0.017     1.034252    1.399352
pyperstudb~k |   1.108709   .1041653     1.10   0.272     .9222432    1.332875
pyperstudl~o |   1.183169   .0874933     2.27   0.023     1.023533    1.367703
pyperstudm~e |   .9638525    .016879    -2.10   0.036     .9313316    .9975089
       Asian |   3.90e-07    .000718    -0.01   0.994           0           .
       Black |   2.568481   2.161585     1.12   0.262     .4935386    13.36692
      Latino |   1.138494   .2973994     0.50   0.620     .6823046    1.899691
       Other |   5.689469   6.723051     1.47   0.141      .561353    57.66436
   AsianMale |   .6774346   2312.841    -0.00   1.000           0           .
   BlackMale |   .5561416   .8115523    -0.40   0.688     .0318468    9.711926
  LatinoMale |   1.912238    .835313     1.48   0.138     .8122988     4.50161
   OtherMale |   7.05e-08   .0001154    -0.01   0.992           0           .
------------------------------------------------------------------------------


--------->  region = 3

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -318.07392
Iteration 1:   log likelihood = -281.80799
Iteration 2:   log likelihood = -281.14572
Iteration 3:   log likelihood = -281.09228
Iteration 4:   log likelihood = -281.08328
Iteration 5:   log likelihood =  -281.0812
Iteration 6:   log likelihood = -281.08071
Iteration 7:   log likelihood =  -281.0806
Iteration 8:   log likelihood = -281.08058

Multinomial logistic regression                 Number of obs   =        300
                                                LR chi2(32)     =      73.99
                                                Prob > chi2     =     0.0000
Log likelihood = -281.08058                     Pseudo R2       =     0.1163

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.009993   .0264664     0.38   0.704      .959429    1.063221
       exper |   .9806187   .0301225    -0.64   0.524     .9233219    1.041471
        male |   1.654281   .6379608     1.31   0.192     .7768732    3.522643
         age |   .9772637   .0243109    -0.92   0.355     .9307582    1.026093
pyacctrati~2 |   1.416101   .3761017     1.31   0.190     .8414412    2.383222
pyperstudlep |   1.000415   .0335468     0.01   0.990     .9367784    1.068374
pyperstude~s |   1.030582   .0228959     1.36   0.175     .9866694    1.076448
pyperstudw~e |    1.02253   .0611092     0.37   0.709     .9095069    1.149599
pyperstudb~k |   1.039297   .0652137     0.61   0.539     .9190272    1.175305
pyperstudl~o |   1.017377    .066827     0.26   0.793     .8944789     1.15716
pyperstudm~e |   1.029465   .0250916     1.19   0.233     .9814425    1.079837
       Asian |  (omitted)
       Black |   1.234401    1.03518     0.25   0.802     .2385781    6.386777
```

```
      Latino |   2.805277   1.904184     1.52   0.129     .7416372    10.61109
       Other |   1.01e+07   1.58e+10     0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |     .75707   716.2082    -0.00   1.000            0           .
  LatinoMale |   .1251813   .1680179    -1.55   0.122      .009017    1.737876
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
3            |
      tenure |   1.002152   .0204203     0.11   0.916      .962918    1.042985
       exper |   1.012573   .0253121     0.50   0.617     .9641584     1.06342
        male |   3.095214   1.099571     3.18   0.001     1.542775    6.209819
         age |   1.026133   .0224768     1.18   0.239     .9830121    1.071146
pyacctrati~2 |   1.851931   .4544068     2.51   0.012     1.144897    2.995597
pyperstudlep |   1.029966   .0316416     0.96   0.337      .96978    1.093888
pyperstude~s |   1.064639   .0217492     3.07   0.002     1.022853    1.108131
pyperstudw~e |   1.097123   .0626476     1.62   0.105     .9809577    1.227045
pyperstudb~k |   1.058025   .0638587     0.93   0.350     .9399835    1.190889
pyperstudl~o |   1.059046   .0659314     0.92   0.357     .9373955    1.196484
pyperstudm~e |   1.001994   .0307557     0.06   0.948     .9434918    1.064125
       Asian |  (omitted)
       Black |   .9162336   .7961254    -0.10   0.920     .1668737    5.030655
      Latino |   2.351458   1.647231     1.22   0.222     .5957414    9.281467
       Other |   .9549989   2263.043    -0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   802380.1   4.55e+08     0.02   0.981            0           .
  LatinoMale |   .3406573   .3658765    -1.00   0.316      .041505    2.795984
   OtherMale |  (omitted)
------------------------------------------------------------------------------


--------->  region = 4

Iteration 0:   log likelihood = -5795.2043
Iteration 1:   log likelihood = -5464.2029
Iteration 2:   log likelihood = -5447.9087
Iteration 3:   log likelihood =   -5447.82
Iteration 4:   log likelihood =   -5447.82

Multinomial logistic regression                 Number of obs   =       5619
                                                LR chi2(38)     =     694.77
                                                Prob > chi2     =     0.0000
Log likelihood =   -5447.82                     Pseudo R2       =     0.0599

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.021134   .0054966     3.89   0.000     1.010417    1.031964
       exper |   1.035054   .0068907     5.18   0.000     1.021636    1.048648
        male |   1.190321   .1051233     1.97   0.049     1.001129    1.415266
         age |   .9668918   .0050512    -6.44   0.000     .9570421    .9768428
pyacctrati~2 |   .9631389   .0474558    -0.76   0.446     .8744772     1.06079
pyperstudlep |   .9988466   .0025297    -0.46   0.649     .9939007    1.003817
pyperstude~s |   .9992145   .0036178    -0.22   0.828     .9921489     1.00633
pyperstudw~e |    .999317   .0045283    -0.15   0.880      .990481    1.008232
pyperstudb~k |   .9982039   .0058253    -0.31   0.758     .9868516    1.009687
pyperstudl~o |   1.000043   .0055958     0.01   0.994     .9891357    1.011071
pyperstudm~e |   1.008166   .0055756     1.47   0.141     .9972967    1.019153
       Asian |   .7216554    .254006    -0.93   0.354      .362015    1.438577
       Black |   .8842385   .0857687    -1.27   0.205     .7311478    1.069384
      Latino |   1.551507   .1803608     3.78   0.000     1.235385     1.94852
       Other |   .7965675   .2620077    -0.69   0.489     .4180658    1.517751
   AsianMale |   1.848305   1.226506     0.93   0.355     .5034187     6.78606
   BlackMale |   1.502385   .2388145     2.56   0.010     1.100213    2.051567
  LatinoMale |   1.095986   .2131753     0.47   0.637     .7485859    1.604606
```

```
   OtherMale |   1.554867   1.014823     0.68   0.499     .4326486    5.587936
-------------+----------------------------------------------------------------
3            |
      tenure |   1.031775   .0060952     5.30   0.000     1.019898    1.043791
       exper |   1.113946   .0100279    11.99   0.000     1.094464    1.133775
        male |   1.301196   .1407251     2.43   0.015     1.052652    1.608424
         age |   .9402152   .0073055    -7.93   0.000     .9260052    .9546434
pyacctrati~2 |   1.314962   .0819187     4.40   0.000     1.163819    1.485733
pyperstudlep |   1.017059   .0031618     5.44   0.000     1.010881    1.023275
pyperstude~s |   1.023922   .0044816     5.40   0.000     1.015176    1.032744
pyperstudw~e |   1.010437   .0057393     1.83   0.068       .99925    1.021748
pyperstudb~k |   .9974549   .0073174    -0.35   0.728     .9832157      1.0119
pyperstudl~o |   .9818275   .0067463    -2.67   0.008     .9686936    .9951394
pyperstudm~e |   .9968244   .0071256    -0.44   0.656      .982956    1.010889
       Asian |   .6208068   .2788541    -1.06   0.289      .257403    1.497267
       Black |   .5973451    .075894    -4.06   0.000     .4656701    .7662532
      Latino |   1.150173   .1650244     0.98   0.329     .8682296    1.523673
       Other |   .4427936   .2431127    -1.48   0.138     .1509577    1.298815
   AsianMale |     1.6547   1.557792     0.53   0.593      .261438    10.47297
   BlackMale |   1.459706   .3106825     1.78   0.076     .9618259    2.215309
  LatinoMale |   1.201475   .2971908     0.74   0.458     .7398877    1.951029
   OtherMale |   4.951913   4.217672     1.88   0.060     .9327877    26.28834
------------------------------------------------------------------------------


--------->  region = 5

Iteration 0:   log likelihood = -520.15513
Iteration 1:   log likelihood = -479.36809
Iteration 2:   log likelihood = -477.79323
Iteration 3:   log likelihood = -477.61452
Iteration 4:   log likelihood = -477.58759
Iteration 5:   log likelihood = -477.58109
Iteration 6:   log likelihood = -477.57972
Iteration 7:   log likelihood = -477.57943
Iteration 8:   log likelihood = -477.57937
Iteration 9:   log likelihood = -477.57935

Multinomial logistic regression                 Number of obs   =        498
                                                LR chi2(38)     =      85.15
                                                Prob > chi2     =     0.0000
Log likelihood = -477.57935                     Pseudo R2       =     0.0819

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9786617   .0174448    -1.21   0.226     .9450609    1.013457
       exper |   1.010826   .0224033     0.49   0.627     .9678568    1.055704
        male |   1.541697   .4280162     1.56   0.119     .8947109    2.656534
         age |   1.010138   .0182196     0.56   0.576     .9750521    1.046486
pyacctrati~2 |    .985902   .1711865    -0.08   0.935     .7015132     1.38558
pyperstudlep |   1.016426   .0328283     0.50   0.614      .954078    1.082849
pyperstude~s |   .9975246   .0115676    -0.21   0.831     .9751083    1.020456
pyperstudw~e |   .9762965   .0490794    -0.48   0.633     .8846896    1.077389
pyperstudb~k |   .9686978   .0503085    -0.61   0.540     .8749473    1.072494
pyperstudl~o |   .9702786   .0616141    -0.48   0.635     .8567298    1.098877
pyperstudm~e |   1.031343   .0278515     1.14   0.253      .978175    1.087402
       Asian |   3.297937   5.040134     0.78   0.435     .1649597    65.93363
       Black |   1.820383   .7297547     1.49   0.135      .829723    3.993855
      Latino |   .9400952   .8142841    -0.07   0.943     .1721412    5.134034
       Other |   7.312908   8.838561     1.65   0.100     .6843953    78.13998
   AsianMale |    .170866   767.3316    -0.00   1.000            0           .
   BlackMale |   2.638138   1.497543     1.71   0.087     .8671843    8.025711
  LatinoMale |   3.91e-07   .0005423    -0.01   0.992            0           .
```

```
   OtherMale |   .1865739   .3537472    -0.89   0.376      .004539    7.669077
-------------+----------------------------------------------------------------
3            |
      tenure |   1.000687   .0180522     0.04   0.970     .9659235    1.036701
       exper |   1.060872   .0271136     2.31   0.021     1.009039    1.115367
        male |   2.207842   .6446478     2.71   0.007     1.245757    3.912935
         age |   .9822277   .0217921    -0.81   0.419     .9404314    1.025882
pyacctrati~2 |    1.54835   .2848582     2.38   0.017     1.079616    2.220595
pyperstudlep |   .9819237   .0340828    -0.53   0.599     .9173442    1.051049
pyperstude~s |   1.031173   .0126421     2.50   0.012     1.006691    1.056252
pyperstudw~e |   .9539311   .0477954    -0.94   0.347     .8647065    1.052362
pyperstudb~k |   .9243109   .0480379    -1.51   0.130     .8347949    1.023426
pyperstudl~o |   .9499106   .0596655    -0.82   0.413     .8398801    1.074356
pyperstudm~e |   1.015848   .0292178     0.55   0.585     .9601664    1.074759
       Asian |   2.71e-06   .0031483    -0.01   0.991            0           .
       Black |   1.961971   .9065827     1.46   0.145     .7931796    4.853038
      Latino |   .4976932   .5715694    -0.61   0.543     .0524095    4.726213
       Other |   3.663735    5.68076     0.84   0.402       .17543    76.51458
   AsianMale |   5.93e+12   1.72e+16     0.01   0.992            0           .
   BlackMale |   1.644677   1.062251     0.77   0.441     .4637816    5.832408
  LatinoMale |   5.68e-07   .0007122    -0.01   0.991            0           .
   OtherMale |   1.90e-07   .0002254    -0.01   0.990            0           .
------------------------------------------------------------------------------


---------->  region = 6

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1079.9338
Iteration 1:   log likelihood = -1011.2463
Iteration 2:   log likelihood =  -1009.263
Iteration 3:   log likelihood = -1009.0837
Iteration 4:   log likelihood = -1009.0508
Iteration 5:   log likelihood = -1009.0436
Iteration 6:   log likelihood = -1009.0419
Iteration 7:   log likelihood = -1009.0415
Iteration 8:   log likelihood = -1009.0415
Iteration 9:   log likelihood = -1009.0414

Multinomial logistic regression                 Number of obs   =       1028
                                                LR chi2(36)     =     141.78
                                                Prob > chi2     =     0.0000
Log likelihood = -1009.0414                     Pseudo R2       =     0.0656

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.01593   .0135077     1.19   0.235     .9897977    1.042753
       exper |   1.010514   .0165289     0.64   0.523     .9786317    1.043435
        male |   1.413242     .24848     1.97   0.049     1.001281    1.994698
         age |   .9737434   .0124169    -2.09   0.037     .9497084    .9983867
pyacctrati~2 |   1.023102   .1207637     0.19   0.847      .811794    1.289413
pyperstudlep |   1.013779    .011626     1.19   0.233     .9912468    1.036824
pyperstude~s |   .9877199   .0068681    -1.78   0.076     .9743499    1.001273
pyperstudw~e |   1.050597   .0318281     1.63   0.103     .9900308    1.114868
pyperstudb~k |   1.033661   .0343791     1.00   0.320     .9684281    1.103287
pyperstudl~o |   1.053787   .0325452     1.70   0.090     .9918922    1.119545
pyperstudm~e |   1.005933   .0157571     0.38   0.706     .9755191    1.037296
       Asian |    .563774    .658829    -0.49   0.624     .0570673     5.56959
       Black |   2.362292    .886154     2.29   0.022      1.13247    4.927654
      Latino |   .6457341   .2958594    -0.95   0.340     .2630597    1.585088
       Other |   1.29e-06   .0015206    -0.01   0.991            0           .
   AsianMale |  (omitted)
   BlackMale |   4.494518   3.437602     1.96   0.049       1.0038    20.12422
```

```
  LatinoMale |   1.417667   .9561951     0.52   0.605     .3779647    5.317371
   OtherMale |   1.30e+13   3.98e+16     0.01   0.992            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9981919   .0125174    -0.14   0.885     .9739573    1.023029
       exper |   1.097503   .0194831     5.24   0.000     1.059974    1.136362
        male |   1.628723   .3058685     2.60   0.009     1.127183    2.353422
         age |   .9638009   .0146009    -2.43   0.015     .9356044    .9928473
pyacctrati~2 |   1.231503   .1535072     1.67   0.095     .9645684    1.572309
pyperstudlep |   1.024422   .0126113     1.96   0.050     .9999998     1.04944
pyperstude~s |   1.017782   .0074426     2.41   0.016     1.003299    1.032474
pyperstudw~e |   1.015102   .0294859     0.52   0.606     .9589253     1.07457
pyperstudb~k |   1.013647   .0317465     0.43   0.665     .9532959    1.077818
pyperstudl~o |   .9948523   .0292943    -0.18   0.861     .9390619    1.053957
pyperstudm~e |   .9912064   .0179126    -0.49   0.625     .9567129    1.026944
       Asian |   6.60e-07   .0007164    -0.01   0.990            0           .
       Black |   1.302673   .5706019     0.60   0.546     .5520632    3.073846
      Latino |   .5034606   .2891163    -1.20   0.232     .1633639    1.551583
       Other |   .9072934   1.157927    -0.08   0.939     .0743717    11.06847
   AsianMale |  (omitted)
   BlackMale |   3.115629   2.687461     1.32   0.188     .5745412    16.89547
  LatinoMale |   1.857189   1.465605     0.78   0.433     .3954836    8.721347
   OtherMale |   .2497657   1226.807    -0.00   1.000            0           .
------------------------------------------------------------------------------


--------->  region = 7

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1198.5867
Iteration 1:   log likelihood = -1122.3105
Iteration 2:   log likelihood = -1120.3388
Iteration 3:   log likelihood = -1120.2125
Iteration 4:   log likelihood = -1120.1926
Iteration 5:   log likelihood = -1120.1877
Iteration 6:   log likelihood = -1120.1866
Iteration 7:   log likelihood = -1120.1863
Iteration 8:   log likelihood = -1120.1863
Iteration 9:   log likelihood = -1120.1863

Multinomial logistic regression                 Number of obs   =       1157
                                                LR chi2(36)     =     156.80
                                                Prob > chi2     =     0.0000
Log likelihood = -1120.1863                     Pseudo R2       =     0.0654

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9918952   .0116031    -0.70   0.487     .9694123      1.0149
       exper |   1.028108   .0142044     2.01   0.045     1.000642    1.056329
        male |   1.777178    .317333     3.22   0.001     1.252392    2.521863
         age |   .9672815     .01139    -2.83   0.005     .9452131    .9898652
pyacctrati~2 |   .9029291   .1075307    -0.86   0.391     .7149625    1.140313
pyperstudlep |   1.011759   .0125208     0.94   0.345     .9875138    1.036599
pyperstude~s |   .9989738   .0081349    -0.13   0.900     .9831563    1.015046
pyperstudw~e |    .963965   .0516002    -0.69   0.493      .867955    1.070595
pyperstudb~k |   .9627118   .0536585    -0.68   0.495      .863084     1.07384
pyperstudl~o |   .9707928   .0528268    -0.54   0.586     .8725844    1.080055
pyperstudm~e |   .9822262   .0179691    -0.98   0.327     .9476313    1.018084
       Asian |    7048231   2.45e+10     0.00   0.996            0           .
       Black |   2.053558   .6168911     2.40   0.017     1.139738     3.70006
      Latino |   2.584147   1.906747     1.29   0.198     .6084811    10.97457
       Other |   2.332855    1.93338     1.02   0.307     .4596686    11.83943
   AsianMale |  (omitted)
```

```
   BlackMale |   1.512604   .7665175     0.82   0.414     .5602421    4.083896
  LatinoMale |   3.555545   4.688997     0.96   0.336     .2681359    47.14736
   OtherMale |   .4897026   .6143233    -0.57   0.569     .0418904    5.724662
-------------+----------------------------------------------------------------
3            |
      tenure |   .9960002   .0104412    -0.38   0.702     .9757447    1.016676
       exper |   1.045588   .0136579     3.41   0.001     1.019159    1.072702
        male |   2.111807     .35441     4.45   0.000     1.519857    2.934306
         age |    .983243   .0112467    -1.48   0.140     .9614452    1.005535
pyacctrati~2 |   1.046022   .1184948     0.40   0.691     .8377523    1.306069
pyperstudlep |   1.044071   .0136734     3.29   0.001     1.017613    1.071217
pyperstude~s |   1.035258   .0078148     4.59   0.000     1.020054    1.050689
pyperstudw~e |    .885591   .0432312    -2.49   0.013     .8047866    .9745085
pyperstudb~k |   .8734883   .0444642    -2.66   0.008     .7905464    .9651322
pyperstudl~o |   .8440166   .0420997    -3.40   0.001     .7654078    .9306986
pyperstudm~e |   .9846194   .0186668    -0.82   0.414     .9487045    1.021894
       Asian |   .0844554   497.6888    -0.00   1.000            0           .
       Black |   1.073316   .3928943     0.19   0.847     .5237693    2.199457
      Latino |   3.373883   2.510588     1.63   0.102     .7847485     14.5054
       Other |   1.457563   1.343465     0.41   0.683     .2393634     8.87558
   AsianMale |  (omitted)
   BlackMale |   1.850936   1.044994     1.09   0.275     .6121014    5.597052
  LatinoMale |   4.461306   5.913089     1.13   0.259     .3320974    59.93198
   OtherMale |   5.38e-07   .0003919    -0.02   0.984            0           .
------------------------------------------------------------------------------


--------->  region = 8

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -387.37646
Iteration 1:   log likelihood = -346.11158
Iteration 2:   log likelihood = -344.39083
Iteration 3:   log likelihood = -344.03834
Iteration 4:   log likelihood = -343.96061
Iteration 5:   log likelihood = -343.94435
Iteration 6:   log likelihood = -343.94164
Iteration 7:   log likelihood =   -343.941
Iteration 8:   log likelihood = -343.94086
Iteration 9:   log likelihood = -343.94083

Multinomial logistic regression                 Number of obs   =        365
                                                LR chi2(36)     =      86.87
                                                Prob > chi2     =     0.0000
Log likelihood = -343.94083                     Pseudo R2       =     0.1121

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.03433   .0236542     1.48   0.140     .9889922    1.081746
       exper |   .9869625   .0286525    -0.45   0.651     .9323724    1.044749
        male |   3.144335   1.029613     3.50   0.000     1.655018    5.973858
         age |   .9798686   .0236492    -0.84   0.399     .9345962    1.027334
pyacctrati~2 |   .8342703    .185369    -0.82   0.415      .539729    1.289549
pyperstudlep |   1.055469    .029684     1.92   0.055     .9988638    1.115282
pyperstude~s |    .983754   .0140992    -1.14   0.253     .9565045     1.01178
pyperstudw~e |   1.060559    .159762     0.39   0.696      .789424    1.424818
pyperstudb~k |   1.085372   .1635642     0.54   0.587     .8077991    1.458322
pyperstudl~o |   1.063016   .1583167     0.41   0.682     .7939056    1.423346
pyperstudm~e |   1.062774    .050055     1.29   0.196       .96906    1.165551
       Asian |   .7872784   5314.336    -0.00   1.000            0           .
       Black |   3.486512   2.150229     2.03   0.043     1.040953    11.67753
      Latino |   1.22e-06   .0024796    -0.01   0.995            0           .
       Other |   7.94e-07   .0013059    -0.01   0.993            0           .
```

```
   AsianMale |  (omitted)
   BlackMale |   937823.1   8.73e+08     0.01   0.988           0           .
  LatinoMale |    1858184   1.31e+10     0.00   0.998           0           .
   OtherMale |    1435322   9.97e+09     0.00   0.998           0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.021794   .0197464     1.12   0.265     .9838155    1.061238
       exper |   1.007429   .0262718     0.28   0.777     .9572314     1.06026
        male |    3.03698   .9047916     3.73   0.000     1.693745    5.445478
         age |   .9893763   .0223713    -0.47   0.637     .9464868    1.034209
pyacctrati~2 |   1.207368   .2445204     0.93   0.352     .8118038    1.795676
pyperstudlep |   1.055503    .029572     1.93   0.054     .9991054    1.115084
pyperstude~s |     1.0136   .0126087     1.09   0.278      .989186    1.038616
pyperstudw~e |   1.119715   .1397263     0.91   0.365     .8767748    1.429969
pyperstudb~k |    1.09619   .1372518     0.73   0.463     .8576468    1.401081
pyperstudl~o |   1.081584   .1335549     0.64   0.525     .8490892     1.37774
pyperstudm~e |   1.075799   .0459492     1.71   0.087     .9894068    1.169735
       Asian |    4997671   1.96e+10     0.00   0.997           0           .
       Black |   3.790168   2.338551     2.16   0.031     1.131002    12.70146
      Latino |     6.5679    8.76985     1.41   0.159     .4795696    89.95005
       Other |   5.427876   6.503078     1.41   0.158     .5185789    56.81264
   AsianMale |  (omitted)
   BlackMale |    1014612   9.45e+08     0.01   0.988           0           .
  LatinoMale |    2284069   8.96e+09     0.00   0.997           0           .
   OtherMale |    4305732   1.69e+10     0.00   0.997           0           .
------------------------------------------------------------------------------


---------->  region = 9

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -251.07424
Iteration 1:   log likelihood = -221.21678
Iteration 2:   log likelihood = -219.67315
Iteration 3:   log likelihood = -219.45075
Iteration 4:   log likelihood = -219.40852
Iteration 5:   log likelihood = -219.39813
Iteration 6:   log likelihood = -219.39602
Iteration 7:   log likelihood = -219.39572
Iteration 8:   log likelihood = -219.39568
Iteration 9:   log likelihood = -219.39568

Multinomial logistic regression                 Number of obs   =        234
                                                LR chi2(34)     =      63.36
                                                Prob > chi2     =     0.0016
Log likelihood = -219.39568                     Pseudo R2       =     0.1262

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9762298   .0300471    -0.78   0.434     .9190796    1.036934
       exper |   .9794326   .0367138    -0.55   0.579     .9100546      1.0541
        male |   .5046189   .2133373    -1.62   0.106     .2203443    1.155647
         age |   .9830165   .0296092    -0.57   0.570     .9266633    1.042797
pyacctrati~2 |   .6538348   .2061691    -1.35   0.178     .3524234    1.213029
pyperstudlep |     1.1288   .0723933     1.89   0.059     .9954669    1.279991
pyperstude~s |   1.001413   .0194862     0.07   0.942     .9639402    1.040343
pyperstudw~e |   .7776777   .0920564    -2.12   0.034     .6166518    .9807522
pyperstudb~k |   .7908087    .100893    -1.84   0.066     .6158477    1.015476
pyperstudl~o |   .7584195    .093313    -2.25   0.025     .5959105     .965246
pyperstudm~e |   1.045618   .0456376     1.02   0.307     .9598891    1.139003
       Asian |  (omitted)
       Black |   1.599382   2.176078     0.35   0.730     .1111296    23.01839
```

```
      Latino |   2.10e+07   1.03e+11     0.00   0.997           0           .
       Other |   5.67e+07   2.79e+11     0.00   0.997           0           .
   AsianMale |  (omitted)
   BlackMale |    8744676   1.27e+10     0.01   0.991           0           .
  LatinoMale |   7.19e-08   .0004061    -0.00   0.998           0           .
   OtherMale |   .1228222   629.0955    -0.00   1.000           0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.033023   .0233881     1.44   0.151     .9881855    1.079895
       exper |   1.024846   .0344713     0.73   0.466     .9594623    1.094685
        male |   1.281625   .4441597     0.72   0.474     .6497835    2.527861
         age |   .9656107   .0281398    -1.20   0.230     .9120033    1.022369
pyacctrati~2 |   .8747018   .2224737    -0.53   0.599     .5313289    1.439981
pyperstudlep |   1.136727   .0636944     2.29   0.022     1.018499    1.268679
pyperstude~s |   1.015421   .0159877     0.97   0.331     .9845644    1.047245
pyperstudw~e |   .9660475   .0956133    -0.35   0.727     .7957047    1.172857
pyperstudb~k |   .9377149   .1027093    -0.59   0.557     .7565497    1.162262
pyperstudl~o |   .9296322     .09437    -0.72   0.472     .7619087    1.134278
pyperstudm~e |   1.023519    .037161     0.64   0.522     .9532156    1.099007
       Asian |  (omitted)
       Black |   2.789388   3.772562     0.76   0.448     .1969178    39.51235
      Latino |   1.588042   11222.98     0.00   1.000            0           .
       Other |   .8105252    5728.13    -0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |     863318   1.25e+09     0.01   0.992           0           .
  LatinoMale |    2897641   2.10e+10     0.00   0.998           0           .
   OtherMale |    3586636   2.59e+10     0.00   0.998           0           .
------------------------------------------------------------------------------


--------->  region = 10

Iteration 0:   log likelihood =  -4323.142
Iteration 1:   log likelihood = -4073.3132
Iteration 2:   log likelihood = -4067.1581
Iteration 3:   log likelihood = -4067.1307
Iteration 4:   log likelihood = -4067.1307

Multinomial logistic regression                 Number of obs   =       4075
                                                LR chi2(38)     =     512.02
                                                Prob > chi2     =     0.0000
Log likelihood = -4067.1307                     Pseudo R2       =     0.0592

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.017879   .0066453     2.71   0.007     1.004938    1.030987
       exper |   1.033385   .0080863     4.20   0.000     1.017657    1.049356
        male |    1.10436   .1120491     0.98   0.328     .9052058    1.347331
         age |   .9627714   .0059215    -6.17   0.000     .9512352    .9744476
pyacctrati~2 |   .9197099   .0521889    -1.47   0.140     .8229046    1.027903
pyperstudlep |   1.000868   .0038063     0.23   0.820     .9934352    1.008356
pyperstude~s |   .9865094   .0036949    -3.63   0.000     .9792942    .9937779
pyperstudw~e |   .9955083   .0064886    -0.69   0.490     .9828717    1.008307
pyperstudb~k |   .9951731   .0074085    -0.65   0.516     .9807582      1.0098
pyperstudl~o |   1.001493   .0072743     0.21   0.837     .9873363    1.015852
pyperstudm~e |   1.008143   .0059812     1.37   0.172     .9964883    1.019935
       Asian |   .6006242   .3229807    -0.95   0.343     .2093516    1.723175
       Black |   1.270802   .1503113     2.03   0.043     1.007853    1.602354
      Latino |   1.317673   .2113142     1.72   0.085     .9622793    1.804322
       Other |   .3335742   .1657402    -2.21   0.027     .1259688    .8833277
   AsianMale |   2.193723   1.722469     1.00   0.317     .4707986    10.22183
   BlackMale |   1.522148   .2988046     2.14   0.032     1.036006    2.236411
  LatinoMale |   1.769531   .4676376     2.16   0.031     1.054167    2.970346
```

```
   OtherMale |   5.785603   4.071751     2.49   0.013     1.456451    22.98271
-------------+----------------------------------------------------------------
3            |
      tenure |   1.021909   .0065881     3.36   0.001     1.009078    1.034903
       exper |    1.08559   .0095938     9.29   0.000     1.066948    1.104557
        male |   1.129562   .1251002     1.10   0.271     .9091567    1.403401
         age |   .9626293   .0071585    -5.12   0.000     .9487006    .9767624
pyacctrati~2 |   1.336098   .0857996     4.51   0.000     1.178087    1.515304
pyperstudlep |   1.020517   .0044316     4.68   0.000     1.011868     1.02924
pyperstude~s |   1.011952   .0040692     2.95   0.003     1.004007    1.019959
pyperstudw~e |   1.003536   .0070989     0.50   0.618     .9897188    1.017547
pyperstudb~k |   .9943116   .0081164    -0.70   0.485     .9785303    1.010347
pyperstudl~o |   .9780977   .0076208    -2.84   0.004     .9632746    .9931489
pyperstudm~e |   .9924283    .007932    -0.95   0.342     .9770029    1.008097
       Asian |   1.491457   .7366657     0.81   0.418     .5664772    3.926804
       Black |   .8439365    .120623    -1.19   0.235     .6377469    1.116789
      Latino |   1.252386   .2201872     1.28   0.201     .8873299    1.767631
       Other |   .4915545   .2239019    -1.56   0.119     .2013035    1.200306
   AsianMale |   .3467197   .4129158    -0.89   0.374     .0335942    3.578429
   BlackMale |   1.933122   .4573611     2.79   0.005     1.215827    3.073596
  LatinoMale |   1.719197   .5117866     1.82   0.069     .9592504    3.081195
   OtherMale |   2.513778   1.983373     1.17   0.243     .5354613    11.80119
-------------------------------------------------------------------------------


---------->  region = 11

Iteration 0:   log likelihood = -3214.5056
Iteration 1:   log likelihood = -3028.5521
Iteration 2:   log likelihood = -3024.6148
Iteration 3:   log likelihood = -3024.6058
Iteration 4:   log likelihood = -3024.6058

Multinomial logistic regression                 Number of obs   =       2998
                                                LR chi2(38)     =     379.80
                                                Prob > chi2     =     0.0000
Log likelihood = -3024.6058                     Pseudo R2       =     0.0591

-------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
1            |  (base outcome)
-------------+-----------------------------------------------------------------
2            |
      tenure |   1.024092   .0079073     3.08   0.002     1.008711    1.039708
       exper |   1.015806   .0089978     1.77   0.077     .9983226    1.033595
        male |   1.338009    .139865     2.79   0.005     1.090137    1.642242
         age |    .974065   .0067077    -3.82   0.000     .9610065    .9873009
pyacctrati~2 |   1.036614   .0701823     0.53   0.595     .9077949    1.183712
pyperstudlep |   .9939229   .0044859    -1.35   0.177     .9851695    1.002754
pyperstude~s |   .9934493   .0042354    -1.54   0.123     .9851827    1.001785
pyperstudw~e |   .9972177   .0095284    -0.29   0.771     .9787161    1.016069
pyperstudb~k |    .997612   .0111632    -0.21   0.831     .9759708    1.019733
pyperstudl~o |   1.005757   .0105037     0.55   0.583     .9853791    1.026556
pyperstudm~e |    1.01265   .0079289     1.61   0.108     .9972284     1.02831
       Asian |    2.04146   1.254603     1.16   0.246     .6121041     6.80858
       Black |    1.79955   .2989256     3.54   0.000      1.29948    2.492058
      Latino |   1.704021   .3430286     2.65   0.008      1.14848    2.528287
       Other |    .707667   .3063231    -0.80   0.424     .3029529    1.653038
   AsianMale |   1.797151   1.844553     0.57   0.568     .2403985    13.43499
   BlackMale |   1.451648   .4183564     1.29   0.196     .8251828    2.553716
  LatinoMale |   .9831966   .3249166    -0.05   0.959     .5144511    1.879042
   OtherMale |    1.04571   .7560092     0.06   0.951     .2535271    4.313185
-------------+-----------------------------------------------------------------
3            |
      tenure |   1.029379   .0079447     3.75   0.000     1.013925    1.045069
       exper |   1.085965   .0110543     8.10   0.000     1.064513    1.107848
```

```
        male |   1.509272   .1773348     3.50   0.000      1.19882    1.900121
         age |   .9686485   .0082761    -3.73   0.000     .9525627    .9850059
pyacctrati~2 |   1.485854   .1157124     5.08   0.000     1.275522     1.73087
pyperstudlep |   1.012142   .0053622     2.28   0.023     1.001687    1.022707
pyperstude~s |   1.021076    .004855     4.39   0.000     1.011605    1.030636
pyperstudw~e |   1.019358   .0114607     1.71   0.088     .9971414     1.04207
pyperstudb~k |   1.010218   .0133909     0.77   0.443     .9843105    1.036808
pyperstudl~o |   .9997019   .0122499    -0.02   0.981     .9759786    1.024002
pyperstudm~e |   .9937865   .0097854    -0.63   0.527     .9747913    1.013152
       Asian |   1.272455   1.002902     0.31   0.760     .2714921    5.963868
       Black |   1.548249    .320174     2.11   0.035     1.032321    2.322027
      Latino |   1.062057   .2650989     0.24   0.809     .6511493    1.732269
       Other |   .7714523   .3841233    -0.52   0.602     .2907213    2.047111
   AsianMale |   1.680841   2.182977     0.40   0.689     .1318367    21.42974
   BlackMale |   1.475513   .5306189     1.08   0.279     .7291839    2.985721
  LatinoMale |   1.832317      .7038     1.58   0.115     .8630798    3.890007
   OtherMale |    1.08336   .9071556     0.10   0.924     .2099015    5.591517
------------------------------------------------------------------------------


--------->  region = 12

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -1001.2523
Iteration 1:   log likelihood = -937.23336
Iteration 2:   log likelihood = -935.75854
Iteration 3:   log likelihood = -935.62553
Iteration 4:   log likelihood = -935.60695
Iteration 5:   log likelihood =  -935.6025
Iteration 6:   log likelihood = -935.60143
Iteration 7:   log likelihood = -935.60121
Iteration 8:   log likelihood = -935.60116
Iteration 9:   log likelihood = -935.60115

Multinomial logistic regression                 Number of obs   =        931
                                                LR chi2(36)     =     131.30
                                                Prob > chi2     =     0.0000
Log likelihood = -935.60115                     Pseudo R2       =     0.0656

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.011991   .0123692     0.98   0.329     .9880356    1.036527
       exper |    1.00947   .0156938     0.61   0.544     .9791747    1.040703
        male |   1.056979   .2026304     0.29   0.773     .7259133    1.539032
         age |   .9797165   .0120133    -1.67   0.095     .9564515    1.003547
pyacctrati~2 |   .8696858   .1067061    -1.14   0.255     .6837922    1.106116
pyperstudlep |   1.012672   .0143556     0.89   0.374      .984923    1.041203
pyperstude~s |   .9971604    .007534    -0.38   0.707     .9825028    1.012037
pyperstudw~e |    .883992   .0427215    -2.55   0.011     .8041027    .9718185
pyperstudb~k |     .89148   .0450021    -2.28   0.023     .8075004    .9841935
pyperstudl~o |   .8953067   .0449973    -2.20   0.028     .8113182    .9879898
pyperstudm~e |   1.018918   .0132427     1.44   0.149     .9932904    1.045206
       Asian |    4041212   7.91e+09     0.01   0.994            0           .
       Black |   .9758712   .3158361    -0.08   0.940     .5174938    1.840263
      Latino |   .3577916   .1662981    -2.21   0.027     .1438798    .8897347
       Other |   .5838574   .5226519    -0.60   0.548     .1010035    3.375027
   AsianMale |  (omitted)
   BlackMale |   1.859745   1.001434     1.15   0.249     .6472904    5.343279
  LatinoMale |   3.121323   2.236721     1.59   0.112     .7662543    12.71465
   OtherMale |   7.48e-06   .0062518    -0.01   0.989            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.005256   .0115227     0.46   0.647     .9829234    1.028095
```

```
       exper |    1.05815   .0177199     3.38   0.001     1.023983    1.093456
        male |   1.329643   .2566957     1.48   0.140     .9107626    1.941175
         age |   .9661353   .0135695    -2.45   0.014     .9399022    .9931005
pyacctrati~2 |   1.274792   .1603492     1.93   0.054     .9962565      1.6312
pyperstudlep |   1.034216   .0148709     2.34   0.019     1.005477    1.063777
pyperstude~s |   1.019097   .0080151     2.41   0.016     1.003508    1.034928
pyperstudw~e |   1.002771   .0542037     0.05   0.959     .9019675     1.11484
pyperstudb~k |   .9925815   .0564208    -0.13   0.896     .8879362     1.10956
pyperstudl~o |   .9795234   .0552303    -0.37   0.714     .8770411    1.093981
pyperstudm~e |   .9866889   .0137912    -0.96   0.338     .9600254    1.014093
       Asian |   .8762367   2769.318    -0.00   1.000            0           .
       Black |   1.197807   .4497374     0.48   0.631     .5738367     2.50026
      Latino |   .2776082   .1814208    -1.96   0.050     .0771188    .9993192
       Other |   .8607885    .772411    -0.17   0.867     .1482819    4.996948
   AsianMale |  (omitted)
   BlackMale |   1.726868   1.013256     0.93   0.352     .5467751    5.453929
  LatinoMale |   5.376274   4.712781     1.92   0.055     .9645566    29.96643
   OtherMale |   4.648478   6.778616     1.05   0.292     .2667172    81.01595
------------------------------------------------------------------------------


---------->  region = 13

Iteration 0:   log likelihood = -1972.7792
Iteration 1:   log likelihood = -1891.9657
Iteration 2:   log likelihood = -1890.8018
Iteration 3:   log likelihood = -1890.7305
Iteration 4:   log likelihood = -1890.7216
Iteration 5:   log likelihood = -1890.7204
Iteration 6:   log likelihood = -1890.7202
Iteration 7:   log likelihood = -1890.7202
Iteration 8:   log likelihood = -1890.7202

Multinomial logistic regression                 Number of obs   =       1823
                                                LR chi2(38)     =     164.12
                                                Prob > chi2     =     0.0000
Log likelihood = -1890.7202                     Pseudo R2       =     0.0416

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    .995991   .0097368    -0.41   0.681      .977089    1.015259
       exper |   .9851868   .0098983    -1.49   0.137     .9659762    1.004779
        male |   1.175896   .1652364     1.15   0.249     .8928092    1.548744
         age |   .9904755   .0082468    -1.15   0.250     .9744433    1.006772
pyacctrati~2 |   1.039777   .0930151     0.44   0.663     .8725583    1.239042
pyperstudlep |   1.001818   .0058374     0.31   0.755     .9904416    1.013324
pyperstude~s |   .9996807   .0059045    -0.05   0.957     .9881749     1.01132
pyperstudw~e |   .9700734    .012664    -2.33   0.020     .9455673    .9952146
pyperstudb~k |    .961449   .0161286    -2.34   0.019     .9303515     .993586
pyperstudl~o |   .9771695   .0136092    -1.66   0.097     .9508567     1.00421
pyperstudm~e |   1.003169   .0092439     0.34   0.731      .985214    1.021451
       Asian |   1.220875   1.014648     0.24   0.810      .239471     6.22429
       Black |   1.872027   .4545321     2.58   0.010     1.163158    3.012907
      Latino |   1.359432   .2570768     1.62   0.104     .9384044    1.969359
       Other |   .5237881   .3146194    -1.08   0.282     .1613881    1.699964
   AsianMale |     407115   2.91e+08     0.02   0.986            0           .
   BlackMale |   .9970667   .4334507    -0.01   0.995     .4252897    2.337564
  LatinoMale |   1.140261   .3495945     0.43   0.669     .6252206     2.07958
   OtherMale |   .4695272   .5916551    -0.60   0.549     .0397241    5.549667
-------------+----------------------------------------------------------------
3            |
      tenure |   1.024552   .0096493     2.58   0.010     1.005813     1.04364
       exper |   1.021115   .0111834     1.91   0.056     .9994292    1.043271
```

```
       male |   1.160897   .1770213     0.98   0.328     .8609877    1.565275
        age |   .9998577   .0094754    -0.02   0.988     .9814578    1.018603
pyacctrati~2 |   1.416312   .1386332     3.56   0.000      1.16907    1.715842
pyperstudlep |    1.00673   .0064438     1.05   0.295     .9941794    1.019439
pyperstude~s |   1.019818     .00636     3.15   0.002     1.007429     1.03236
pyperstudw~e |   .9868233   .0144265    -0.91   0.364     .9589491    1.015508
pyperstudb~k |   .9747794   .0183582    -1.36   0.175      .939454    1.011433
pyperstudl~o |   .9769455   .0151157    -1.51   0.132     .9477641    1.007025
pyperstudm~e |   .9854075   .0119272    -1.21   0.225     .9623058    1.009064
       Asian |   1.957807   1.526484     0.86   0.389     .4247132    9.024933
       Black |   1.264171   .3574161     0.83   0.407     .7263532     2.20021
      Latino |   .8221658   .1806843    -0.89   0.373     .5344339    1.264808
       Other |   .5140717   .3446085    -0.99   0.321      .138172    1.912615
   AsianMale |   335348.7   2.39e+08     0.02   0.986            0           .
   BlackMale |   .4384778   .2653633    -1.36   0.173     .1339082    1.435781
  LatinoMale |   1.501656   .5339064     1.14   0.253     .7480488     3.01447
   OtherMale |   1.522722   1.653819     0.39   0.699     .1811907    12.79691
------------------------------------------------------------------------------


---------->  region = 14

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
note: OtherMale omitted because of collinearity
Iteration 0:   log likelihood = -276.05823
Iteration 1:   log likelihood = -235.67629
Iteration 2:   log likelihood = -232.86256
Iteration 3:   log likelihood = -232.61729
Iteration 4:   log likelihood = -232.59112
Iteration 5:   log likelihood = -232.58736
Iteration 6:   log likelihood =  -232.5869
Iteration 7:   log likelihood =  -232.5868
Iteration 8:   log likelihood = -232.58679

Multinomial logistic regression                 Number of obs   =        277
                                                LR chi2(30)     =      86.94
                                                Prob > chi2     =     0.0000
Log likelihood = -232.58679                     Pseudo R2       =     0.1575

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9738931   .0279875    -0.92   0.357     .9205549    1.030322
       exper |   1.058392   .0373603     1.61   0.108      .987643    1.134209
        male |   .8541537   .3728034    -0.36   0.718     .3630957    2.009329
         age |   1.003799   .0317395     0.12   0.905     .9434792    1.067976
pyacctrati~2 |   .5294515   .1690744    -1.99   0.046     .2831421    .9900289
pyperstudlep |   .9841791   .0577312    -0.27   0.786     .8772901    1.104091
pyperstude~s |   .9923763   .0206095    -0.37   0.713     .9527934    1.033604
pyperstudw~e |   .8607486   .1408056    -0.92   0.359     .6246439    1.186097
pyperstudb~k |   .8744119   .1679212    -0.70   0.485     .6001394    1.274031
pyperstudl~o |   .8724478   .1432825    -0.83   0.406     .6323336     1.20374
pyperstudm~e |   .8694485   .0578319    -2.10   0.035     .7631777    .9905172
       Asian |  (omitted)
       Black |   1.85e+08   1.41e+12     0.00   0.998            0           .
      Latino |   8.43e-06   .0058061    -0.02   0.986            0           .
       Other |   1.707522   2266.375     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |    1420650   9.79e+08     0.02   0.984            0           .
   OtherMale |  (omitted)
-------------+----------------------------------------------------------------
```

```
3            |
      tenure |   .9906921   .0207966    -0.45   0.656     .9507588    1.032303
       exper |   1.044549   .0278172     1.64   0.102     .9914267    1.100518
        male |   2.799826   .9007051     3.20   0.001     1.490388    5.259724
         age |   1.026863   .0230704     1.18   0.238     .9826267     1.07309
pyacctrati~2 |   1.632993   .3569064     2.24   0.025     1.064011     2.50624
pyperstudlep |    1.01696   .0326095     0.52   0.600     .9550138    1.082925
pyperstude~s |   1.032373   .0129016     2.55   0.011     1.007393    1.057972
pyperstudw~e |   1.228277   .1376145     1.84   0.066     .9861177    1.529903
pyperstudb~k |   1.250777   .1568764     1.78   0.074     .9781813    1.599338
pyperstudl~o |   1.226963   .1374261     1.83   0.068     .9851273    1.528165
pyperstudm~e |   .9778824   .0192362    -1.14   0.256     .9408977    1.016321
       Asian |  (omitted)
       Black |   .8215162   9117.685    -0.00   1.000            0           .
      Latino |   .4537593    .728357    -0.49   0.623     .0195213    10.54731
       Other |   647706.3   4.23e+08     0.02   0.984            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   12.07785   23.87138     1.26   0.207     .2509718    581.2387
   OtherMale |  (omitted)
-------------------------------------------------------------------------------


---------->  region = 15

note: Asian omitted because of collinearity
note: AsianMale omitted because of collinearity
note: BlackMale omitted because of collinearity
Iteration 0:   log likelihood = -276.98708
Iteration 1:   log likelihood = -249.06981
Iteration 2:   log likelihood = -247.23182
Iteration 3:   log likelihood = -247.01057
Iteration 4:   log likelihood = -246.97461
Iteration 5:   log likelihood = -246.97025
Iteration 6:   log likelihood = -246.96963
Iteration 7:   log likelihood = -246.96952
Iteration 8:   log likelihood =  -246.9695
Iteration 9:   log likelihood = -246.96949

Multinomial logistic regression                 Number of obs   =        265
                                                LR chi2(32)     =      60.04
                                                Prob > chi2     =     0.0019
Log likelihood = -246.96949                     Pseudo R2       =     0.1084

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.022545   .0340956     0.67   0.504     .9578555    1.091603
       exper |   .9588885   .0351801    -1.14   0.253     .8923575     1.03038
        male |   .6838338   .3350395    -0.78   0.438     .2617643     1.78645
         age |   .9789441   .0283262    -0.74   0.462     .9249708    1.036067
pyacctrati~2 |   .7065514   .2112285    -1.16   0.245     .3932522    1.269452
pyperstudlep |   .9951424   .0345995    -0.14   0.889     .9295876     1.06532
pyperstude~s |   1.009128   .0172234     0.53   0.594     .9759295    1.043456
pyperstudw~e |   1.554078   .4192949     1.63   0.102     .9158329    2.637118
pyperstudb~k |    1.97895   .6369741     2.12   0.034     1.053063    3.718905
pyperstudl~o |   1.549716   .4176748     1.63   0.104     .9137745    2.628243
pyperstudm~e |    .991106     .04817    -0.18   0.854     .9010518    1.090161
       Asian |  (omitted)
       Black |   7.987503   10.71873     1.55   0.122      .575641    110.8333
      Latino |   3.071864   1.665572     2.07   0.038     1.061399    8.890484
       Other |   1.77e-06   .0024502    -0.01   0.992            0           .
   AsianMale |  (omitted)
   BlackMale |  (omitted)
```

```
  LatinoMale |   1.237571   1.078277     0.24   0.807     .2243524    6.826676
   OtherMale |    4380304   1.64e+10     0.00   0.997            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9900908   .0216295    -0.46   0.648     .9485925    1.033405
       exper |   1.027059   .0282052     0.97   0.331     .9732395    1.083855
        male |    .958429    .324256    -0.13   0.900     .4938343     1.86011
         age |   .9607234   .0238546    -1.61   0.107     .9150887    1.008634
pyacctrati~2 |    1.08116   .2422549     0.35   0.728     .6968862    1.677329
pyperstudlep |   1.050321    .028113     1.83   0.067     .9966412    1.106893
pyperstude~s |   1.020342   .0133742     1.54   0.124     .9944627    1.046894
pyperstudw~e |   1.270184   .2072539     1.47   0.143     .9225239    1.748863
pyperstudb~k |   1.475964   .3144447     1.83   0.068     .9721487    2.240881
pyperstudl~o |   1.235467   .2004862     1.30   0.193     .8988802    1.698089
pyperstudm~e |   .9307485   .0326493    -2.05   0.041     .8689072    .9969911
       Asian |  (omitted)
       Black |   8.87e-07   .0012798    -0.01   0.992            0           .
      Latino |   .9925539   .5126683    -0.01   0.988     .3606586    2.731567
       Other |   1.250456   1.808219     0.15   0.877     .0734835    21.27878
   AsianMale |  (omitted)
   BlackMale |  (omitted)
  LatinoMale |   1.642545   1.325343     0.62   0.539     .3378286    7.986159
   OtherMale |    2490948   4.77e+09     0.01   0.994            0           .
------------------------------------------------------------------------------


---------->  region = 16

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -530.20525
Iteration 1:   log likelihood = -480.39618
Iteration 2:   log likelihood = -478.79823
Iteration 3:   log likelihood = -478.65732
Iteration 4:   log likelihood = -478.62877
Iteration 5:   log likelihood = -478.62268
Iteration 6:   log likelihood = -478.62133
Iteration 7:   log likelihood =   -478.621
Iteration 8:   log likelihood = -478.62093
Iteration 9:   log likelihood = -478.62091

Multinomial logistic regression                 Number of obs   =        488
                                                LR chi2(36)     =     103.17
                                                Prob > chi2     =     0.0000
Log likelihood = -478.62091                     Pseudo R2       =     0.0973

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.077125   .0222108     3.60   0.000     1.034461    1.121549
       exper |   .9123654   .0237285    -3.53   0.000     .8670239    .9600781
        male |   .9498477   .2626973    -0.19   0.852     .5523814    1.633311
         age |   1.005077   .0199873     0.25   0.799      .966656    1.045025
pyacctrati~2 |   1.289483   .2358416     1.39   0.165     .9010195    1.845429
pyperstudlep |   1.025471   .0170184     1.52   0.130     .9926519    1.059375
pyperstude~s |   .9939339   .0095929    -0.63   0.528     .9753088    1.012915
pyperstudw~e |   .9970126   .0285687    -0.10   0.917     .9425623    1.054609
pyperstudb~k |   1.032811   .0371632     0.90   0.370     .9624812    1.108279
pyperstudl~o |   1.000442   .0270483     0.02   0.987     .9488086    1.054885
pyperstudm~e |   1.020356   .0207598     0.99   0.322     .9804678    1.061866
       Asian |   1.17e-06   .0022997    -0.01   0.994            0           .
       Black |   .7898263   .7099175    -0.26   0.793     .1356589    4.598486
      Latino |   2.719417    1.78822     1.52   0.128     .7494578    9.867441
       Other |   8.46e-07   .0007265    -0.02   0.987            0           .
   AsianMale |  (omitted)
```

```
   BlackMale |   381133.6   3.36e+08     0.01   0.988           0           .
  LatinoMale |   1.023882   .9111833     0.03   0.979     .1789532    5.858141
   OtherMale |    7574411   2.28e+10     0.01   0.996           0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.030824   .0162341     1.93   0.054     .9994918    1.063138
       exper |   .9875009   .0210007    -0.59   0.554     .9471863    1.029531
        male |   2.059966    .511508     2.91   0.004     1.266191     3.35136
         age |   1.004855   .0191206     0.25   0.799     .9680692    1.043038
pyacctrati~2 |   1.732756   .2909144     3.27   0.001     1.246891    2.407946
pyperstudlep |   1.029687   .0158626     1.90   0.058     .9990613    1.061251
pyperstude~s |   1.019115   .0092011     2.10   0.036      1.00124    1.037309
pyperstudw~e |   1.038129   .0316099     1.23   0.219     .9779874     1.10197
pyperstudb~k |   1.035565   .0396397     0.91   0.361     .9607154    1.116246
pyperstudl~o |   1.025016   .0301758     0.84   0.401     .9675465    1.085899
pyperstudm~e |   1.004389   .0214455     0.21   0.837     .9632242    1.047313
       Asian |   6.57e-07   .0011378    -0.01   0.993           0           .
       Black |   1.034702   1.017128     0.03   0.972     .1506856    7.104919
      Latino |   3.648905   2.369317     1.99   0.046     1.022017    13.02768
       Other |   2.738399   3.536057     0.78   0.435     .2179477    34.40657
   AsianMale |  (omitted)
   BlackMale |     241966   2.13e+08     0.01   0.989           0           .
  LatinoMale |   .2172173   .2102926    -1.58   0.115     .0325708     1.44864
   OtherMale |    3891314   7.14e+09     0.01   0.993           0           .
------------------------------------------------------------------------------


---------->  region = 17

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -579.96423
Iteration 1:   log likelihood = -506.91422
Iteration 2:   log likelihood = -503.90663
Iteration 3:   log likelihood = -503.67144
Iteration 4:   log likelihood = -503.62758
Iteration 5:   log likelihood = -503.61815
Iteration 6:   log likelihood = -503.61598
Iteration 7:   log likelihood = -503.61546
Iteration 8:   log likelihood = -503.61536
Iteration 9:   log likelihood = -503.61534

Multinomial logistic regression                 Number of obs   =        554
                                                LR chi2(36)     =     152.70
                                                Prob > chi2     =     0.0000
Log likelihood = -503.61534                     Pseudo R2       =     0.1316

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.021336   .0206781     1.04   0.297     .9816008    1.062679
       exper |   .9864351   .0248016    -0.54   0.587     .9390031    1.036263
        male |   2.025223    .533015     2.68   0.007     1.209056    3.392338
         age |   .9825537   .0192199    -0.90   0.368     .9455963    1.020955
pyacctrati~2 |   .9769487   .1733102    -0.13   0.895     .6900316    1.383167
pyperstudlep |   1.044126   .0252278     1.79   0.074     .9958325    1.094761
pyperstude~s |    .996435    .014614    -0.24   0.808     .9681998    1.025494
pyperstudw~e |   .9463045   .0708839    -0.74   0.461     .8170917    1.095951
pyperstudb~k |   .9588624   .0759752    -0.53   0.596     .8209404    1.119956
pyperstudl~o |   .9363165   .0729637    -0.84   0.398     .8036958    1.090821
pyperstudm~e |   1.001278   .0183169     0.07   0.944     .9660138     1.03783
       Asian |   8.02e+07   2.41e+11     0.01   0.995           0           .
       Black |   1.627426   1.316077     0.60   0.547     .3335389     7.94065
      Latino |    .432562   .2839481    -1.28   0.202     .1194789    1.566049
       Other |   1.198813   1.521434     0.14   0.886     .0996501    14.42199
```

```
   AsianMale |  (omitted)
   BlackMale |    1229054   1.26e+09     0.01   0.989           0           .
  LatinoMale |    3.28938   2.634407     1.49   0.137     .6845441    15.80617
   OtherMale |   4.27e-07   .0007502    -0.01   0.993           0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.045012   .0179611     2.56   0.010     1.010395    1.080815
       exper |   1.037122   .0234529     1.61   0.107     .9921588    1.084123
        male |   4.010696   1.038712     5.36   0.000     2.414188    6.662981
         age |   .9861301   .0187108    -0.74   0.462     .9501311    1.023493
pyacctrati~2 |   1.156293   .2023461     0.83   0.407     .8205622    1.629388
pyperstudlep |   1.013771   .0209457     0.66   0.508     .9735383    1.055666
pyperstude~s |   1.063545   .0144085     4.55   0.000     1.035676    1.092163
pyperstudw~e |   1.080991    .094644     0.89   0.374     .9105355    1.283357
pyperstudb~k |   1.023807   .0936382     0.26   0.797     .8557888    1.224813
pyperstudl~o |   1.047527   .0934671     0.52   0.603     .8794587    1.247714
pyperstudm~e |   .9392098   .0220745    -2.67   0.008      .896926    .9834871
       Asian |   3.441649   15559.53     0.00   1.000           0           .
       Black |   3.178804   3.130219     1.17   0.240     .4613941    21.90057
      Latino |   1.325517   .6227467     0.60   0.549     .5278114    3.328832
       Other |   9.34e-07   .0010567    -0.01   0.990           0           .
   AsianMale |  (omitted)
   BlackMale |    1838113   1.89e+09     0.01   0.989           0           .
  LatinoMale |   .5545808   .3894776    -0.84   0.401     .1400145    2.196629
   OtherMale |   964788.7   1.09e+09     0.01   0.990           0           .
------------------------------------------------------------------------------


--------->  region = 18

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -414.76237
Iteration 1:   log likelihood = -378.26022
Iteration 2:   log likelihood = -376.95452
Iteration 3:   log likelihood = -376.76888
Iteration 4:   log likelihood =  -376.7355
Iteration 5:   log likelihood = -376.72788
Iteration 6:   log likelihood = -376.72616
Iteration 7:   log likelihood = -376.72575
Iteration 8:   log likelihood = -376.72566
Iteration 9:   log likelihood = -376.72565

Multinomial logistic regression                 Number of obs   =        380
                                                LR chi2(36)     =      76.07
                                                Prob > chi2     =     0.0001
Log likelihood = -376.72565                     Pseudo R2       =     0.0917

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.016448   .0220009     0.75   0.451     .9742287    1.060497
       exper |   .9729487   .0265718    -1.00   0.315     .9222383    1.026448
        male |   1.068523   .3852317     0.18   0.854     .5271118    2.166034
         age |   .9895112   .0210557    -0.50   0.620     .9490916    1.031652
pyacctrati~2 |   .7621315   .1721473    -1.20   0.229     .4895126    1.186577
pyperstudlep |   .9834727   .0191707    -0.85   0.393     .9466074    1.021774
pyperstude~s |   .9992092   .0135158    -0.06   0.953     .9730667    1.026054
pyperstudw~e |   1.020868    .139805     0.15   0.880     .7805489    1.335178
pyperstudb~k |   1.155318   .1716238     0.97   0.331     .8634844    1.545783
pyperstudl~o |   1.023053   .1402686     0.17   0.868     .7819727    1.338457
pyperstudm~e |     1.0391    .031072     1.28   0.200     .9799503     1.10182
       Asian |   8.45e+07   2.99e+11     0.01   0.996           0           .
       Black |   5.221499   6.214565     1.39   0.165      .506647    53.81272
      Latino |    2.49869   1.048269     2.18   0.029      1.09802    5.686104
```

```
       Other |   .6169591   2821.132    -0.00   1.000           0           .
   AsianMale |  (omitted)
   BlackMale |   .5873499   .9005334    -0.35   0.729     .0290953    11.85691
  LatinoMale |   .8522971   .5331289    -0.26   0.798     .2501194    2.904254
   OtherMale |     3.4785   22494.38     0.00   1.000           0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   1.037096   .0200564     1.88   0.060     .9985215     1.07716
       exper |   1.014521   .0273439     0.53   0.593     .9623192    1.069555
        male |   1.204938   .3874313     0.58   0.562      .641612    2.262856
         age |   .9675075   .0205219    -1.56   0.119     .9281099    1.008578
pyacctrati~2 |   1.054864   .2198922     0.26   0.798     .7010661    1.587209
pyperstudlep |   .9976565   .0158259    -0.15   0.882     .9671156    1.029162
pyperstude~s |   1.023268   .0130655     1.80   0.072     .9979777    1.049199
pyperstudw~e |   .9432966   .1095253    -0.50   0.615     .7513045    1.184351
pyperstudb~k |   .9588075   .1229819    -0.33   0.743     .7456786    1.232853
pyperstudl~o |   .9251984   .1091075    -0.66   0.510     .7342665    1.165778
pyperstudm~e |   .9692353   .0266512    -1.14   0.256     .9183825    1.022904
       Asian |   1.224555   6374.239     0.00   1.000           0           .
       Black |   4.543761   5.436143     1.27   0.206     .4355524    47.40134
      Latino |    1.14407   .4567467     0.34   0.736     .5231514    2.501944
       Other |    6009618   1.80e+10     0.01   0.996           0           .
   AsianMale |  (omitted)
   BlackMale |   1.57e-07    .000141    -0.02   0.986           0           .
  LatinoMale |   1.170748   .6907365     0.27   0.789     .3683475    3.721078
   OtherMale |   1.668032    7052.28     0.00   1.000           0           .
------------------------------------------------------------------------------


--------->  region = 19

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood =  -881.4415
Iteration 1:   log likelihood = -810.07665
Iteration 2:   log likelihood = -806.72665
Iteration 3:   log likelihood = -806.30206
Iteration 4:   log likelihood = -806.22779
Iteration 5:   log likelihood = -806.22054
Iteration 6:   log likelihood = -806.21894
Iteration 7:   log likelihood = -806.21858
Iteration 8:   log likelihood = -806.21852

Multinomial logistic regression                 Number of obs   =        814
                                                LR chi2(36)     =     150.45
                                                Prob > chi2     =     0.0000
Log likelihood = -806.21852                     Pseudo R2       =     0.0853

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
      tenure |    .993856   .0146741    -0.42   0.676     .9655074    1.023037
       exper |   .9529956   .0175928    -2.61   0.009     .9191307    .9881082
        male |   1.002313   .3422702     0.01   0.995     .5132569    1.957366
         age |   1.016662   .0135133     1.24   0.214      .990518    1.043495
pyacctrati~2 |   1.183741   .1731532     1.15   0.249     .8886816    1.576766
pyperstudlep |   1.002963   .0062217     0.48   0.633     .9908425    1.015232
pyperstude~s |   1.013283    .009772     1.37   0.171       .99431    1.032618
pyperstudw~e |   1.107431   .1035226     1.09   0.275     .9220324    1.330108
pyperstudb~k |    1.01878   .0904882     0.21   0.834     .8560051    1.212507
pyperstudl~o |   1.061972   .0876055     0.73   0.466       .90343    1.248335
pyperstudm~e |   1.004777   .0102677     0.47   0.641     .9848533    1.025104
       Asian |    2887864   5.31e+09     0.01   0.994           0           .
       Black |   .9851742   .4361261    -0.03   0.973     .4137092    2.346016
      Latino |   .6461371   .1588675    -1.78   0.076     .3990593    1.046193
       Other |   .9383853   .8918718    -0.07   0.947     .1456705    6.044922
   AsianMale |  (omitted)
```

```
   BlackMale |    .848751   .6677066    -0.21   0.835     .1816126    3.966566
  LatinoMale |   .8950654   .3620912    -0.27   0.784     .4050497    1.977886
   OtherMale |   .5918133   .8331688    -0.37   0.709     .0374837    9.343865
-------------+----------------------------------------------------------------
2            |  (base outcome)
-------------+----------------------------------------------------------------
3            |
      tenure |   .9803203   .0142693    -1.37   0.172     .9527481     1.00869
       exper |   1.118881   .0240731     5.22   0.000      1.07268    1.167073
        male |    1.22997   .4699344     0.54   0.588     .5816696    2.600836
         age |   .9609172   .0171852    -2.23   0.026     .9278184    .9951967
pyacctrati~2 |   1.271923    .212675     1.44   0.150      .916502    1.765176
pyperstudlep |   1.025531   .0069596     3.71   0.000     1.011981    1.039263
pyperstude~s |    1.01118   .0115309     0.97   0.330     .9888303    1.034034
pyperstudw~e |   1.013799   .0917643     0.15   0.880     .8489947    1.210594
pyperstudb~k |   1.008363   .0876211     0.10   0.924     .8504572    1.195588
pyperstudl~o |   .9852522    .077462    -0.19   0.850     .8445487    1.149397
pyperstudm~e |   .9796847   .0162443    -1.24   0.216     .9483583    1.012046
       Asian |   .9006143   2621.288    -0.00   1.000            0           .
       Black |   .3911419   .2504287    -1.47   0.143     .1115199    1.371881
      Latino |   .6807644   .1855155    -1.41   0.158     .3990574    1.161337
       Other |   2.32e-06   .0016638    -0.02   0.986            0           .
   AsianMale |  (omitted)
   BlackMale |   3.12e-06   .0013803    -0.03   0.977            0           .
  LatinoMale |   .9543648   .4318375    -0.10   0.918     .3931488    2.316711
   OtherMale |   640066.2   4.59e+08     0.02   0.985            0           .
------------------------------------------------------------------------------


--------->  region = 20

Iteration 0:   log likelihood = -2192.6506
Iteration 1:   log likelihood = -2092.8672
Iteration 2:   log likelihood =  -2089.876
Iteration 3:   log likelihood =  -2089.576
Iteration 4:   log likelihood = -2089.5225
Iteration 5:   log likelihood = -2089.5108
Iteration 6:   log likelihood = -2089.5081
Iteration 7:   log likelihood = -2089.5074
Iteration 8:   log likelihood = -2089.5073
Iteration 9:   log likelihood = -2089.5073

Multinomial logistic regression                 Number of obs   =       2078
                                                LR chi2(38)     =     206.29
                                                Prob > chi2     =     0.0000
Log likelihood = -2089.5073                     Pseudo R2       =     0.0470

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   .9912517   .0082409    -1.06   0.291     .9752307    1.007536
       exper |   1.010277   .0100087     1.03   0.302     .9908491    1.030085
        male |   1.356364   .2056402     2.01   0.044     1.007685    1.825695
         age |   .9832278   .0077823    -2.14   0.033     .9680925    .9985998
pyacctrati~2 |   .9406998    .077418    -0.74   0.458     .8005687    1.105359
pyperstudlep |   .9987321   .0066589    -0.19   0.849     .9857659    1.011869
pyperstude~s |   .9975373   .0057004    -0.43   0.666      .986427    1.008773
pyperstudw~e |   1.004125   .0274779     0.15   0.880     .9516881    1.059451
pyperstudb~k |   1.011036   .0309662     0.36   0.720     .9521295    1.073588
pyperstudl~o |   1.006118   .0286558     0.21   0.830     .9514921    1.063879
pyperstudm~e |   .9991628   .0082218    -0.10   0.919     .9831776    1.015408
       Asian |   .6335529   .5231698    -0.55   0.580     .1255698    3.196544
       Black |     .78198    .234443    -0.82   0.412     .4345098    1.407316
      Latino |   1.379032   .2004326     2.21   0.027      1.03719    1.833541
```

```
       Other |   .1588035   .1667316    -1.75   0.080     .0202844    1.243246
   AsianMale |    4776419   5.13e+09     0.01   0.989            0           .
   BlackMale |   2.104511   .9905399     1.58   0.114     .8365893    5.294076
  LatinoMale |    1.07009   .2424236     0.30   0.765     .6864119     1.66823
   OtherMale |   6.837845   8.572665     1.53   0.125     .5858152    79.81379
-------------+----------------------------------------------------------------
3            |
      tenure |   1.014877   .0086455     1.73   0.083     .9980723    1.031964
       exper |   1.059369   .0124948     4.89   0.000      1.03516    1.084143
        male |   1.244105   .2139231     1.27   0.204     .8881647    1.742692
         age |    .975075   .0097728    -2.52   0.012     .9561074    .9944188
pyacctrati~2 |   1.135383   .1026781     1.40   0.160     .9509641    1.355566
pyperstudlep |   1.023743   .0067992     3.53   0.000     1.010503    1.037156
pyperstude~s |   1.018751   .0062184     3.04   0.002     1.006636    1.031012
pyperstudw~e |   1.047045   .0319035     1.51   0.131     .9863457    1.111479
pyperstudb~k |    1.02648   .0350013     0.77   0.443     .9601212    1.097426
pyperstudl~o |   1.022908   .0322972     0.72   0.473     .9615252    1.088209
pyperstudm~e |   1.006639   .0088457     0.75   0.451     .9894507    1.024127
       Asian |   .3273322   .3600873    -1.02   0.310     .0378975    2.827269
       Black |   1.393781   .3994135     1.16   0.247     .7948172    2.444117
      Latino |   .9865194   .1610928    -0.08   0.934     .7163239    1.358632
       Other |   .4961113   .3936475    -0.88   0.377     .1047562    2.349518
   AsianMale |   1.29e+07   1.39e+10     0.02   0.988            0           .
   BlackMale |   1.124889   .5862874     0.23   0.821     .4050109    3.124297
  LatinoMale |   .9564434   .2568019    -0.17   0.868     .5650859    1.618841
   OtherMale |   1.81e-06   .0012744    -0.02   0.985            0           .
------------------------------------------------------------------------------
```

by pyschooltype:

```
. bysort pyschooltype : mlogit admin  tenure exper  male age pyacctrating2  pyperstudlep
pyperstudecodis pyperstudwhite pyperstudblack pyperstudlatino pyperstudmobile  Asian
Black Latino
>  Other AsianMale BlackMale LatinoMale OtherMale if validcert2011a==1, rrr iter(20)


---------->  pyschooltype =
no observations


---------->  pyschooltype = B

note: AsianMale omitted because of collinearity
Iteration 0:   log likelihood = -422.57399
Iteration 1:   log likelihood = -392.87974
Iteration 2:   log likelihood = -387.05933
Iteration 3:   log likelihood = -386.34912
Iteration 4:   log likelihood = -386.29743
Iteration 5:   log likelihood = -386.28696
Iteration 6:   log likelihood = -386.28537
Iteration 7:   log likelihood = -386.28519
Iteration 8:   log likelihood = -386.28515
Iteration 9:   log likelihood = -386.28514

Multinomial logistic regression                 Number of obs   =        464
                                                LR chi2(36)     =      72.58
                                                Prob > chi2     =     0.0003
Log likelihood = -386.28514                     Pseudo R2       =     0.0859

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.032523   .0319835     1.03   0.302     .9717013    1.097151
```

```
       exper |   .9678165   .0324519    -0.98   0.329     .9062569    1.033558
        male |   .7152772   .2963862    -0.81   0.419     .3175162    1.611324
         age |   .9750218   .0256739    -0.96   0.337     .9259783    1.026663
pyacctrati~2 |   .8042206    .200197    -0.88   0.381     .4937227    1.309988
pyperstudlep |   .9735139   .0272274    -0.96   0.337     .9215855    1.028368
pyperstude~s |   .9712554   .0125899    -2.25   0.024     .9468905    .9962472
pyperstudw~e |   .9529758   .0276618    -1.66   0.097      .900273    1.008764
pyperstudb~k |   .9971881   .0327593    -0.09   0.932     .9350045    1.063507
pyperstudl~o |   .9846861    .030634    -0.50   0.620     .9264386    1.046596
pyperstudm~e |   1.013338    .020872     0.64   0.520     .9732446    1.055084
       Asian |   4.248731   7.672155     0.80   0.423     .1233673    146.3249
       Black |   1.531056   1.452888     0.45   0.654     .2383679    9.834097
      Latino |    1.46511   1.056009     0.53   0.596     .3567374    6.017165
       Other |   3.988943   13838.52     0.00   1.000            0           .
   AsianMale |  (omitted)
   BlackMale |   1.177478   1.837744     0.10   0.917     .0552641    25.08779
  LatinoMale |   2.980951   3.030739     1.07   0.283     .4063837     21.8662
   OtherMale |   .7134162   2994.679    -0.00   1.000            0           .
-------------+----------------------------------------------------------------
3            |
      tenure |   .9521112   .0163932    -2.85   0.004     .9205173    .9847895
       exper |   1.021354    .017771     1.21   0.225     .9871109    1.056785
        male |   1.151505   .2661557     0.61   0.542     .7320173    1.811382
         age |   .9986452    .015417    -0.09   0.930      .968881    1.029324
pyacctrati~2 |   1.070248   .1602319     0.45   0.650     .7980815    1.435232
pyperstudlep |   1.006934   .0156044     0.45   0.656     .9768098    1.037988
pyperstude~s |   .9987234   .0086345    -0.15   0.883     .9819426    1.015791
pyperstudw~e |   .9716842   .0228254    -1.22   0.221     .9279615    1.017467
pyperstudb~k |   .9835989   .0257889    -0.63   0.528     .9343304    1.035465
pyperstudl~o |   .9762015   .0241831    -0.97   0.331     .9299359    1.024769
pyperstudm~e |    1.00585   .0133485     0.44   0.660     .9800247    1.032356
       Asian |   8.10e-08   .0002941    -0.00   0.996            0           .
       Black |   .7431394   .6817532    -0.32   0.746     .1230782    4.487034
      Latino |   .8554174   .5314148    -0.25   0.802     .2531525    2.890506
       Other |    2822344   3.70e+09     0.01   0.991            0           .
   AsianMale |  (omitted)
   BlackMale |   2.431877   3.020142     0.72   0.474     .2132244    27.73617
  LatinoMale |   3.875507   3.188208     1.65   0.100     .7728279    19.43454
   OtherMale |   1.351479   2170.427     0.00   1.000            0           .
------------------------------------------------------------------------------


---------> pyschooltype = E

Iteration 0:   log likelihood = -12631.536
Iteration 1:   log likelihood = -12005.791
Iteration 2:   log likelihood = -12000.805
Iteration 3:   log likelihood = -12000.803
Iteration 4:   log likelihood = -12000.803

Multinomial logistic regression                 Number of obs   =      11602
                                                LR chi2(38)     =    1261.47
                                                Prob > chi2     =     0.0000
Log likelihood = -12000.803                     Pseudo R2       =     0.0499

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |    1.01526   .0042498     3.62   0.000     1.006965    1.023624
       exper |   1.015888   .0052155     3.07   0.002     1.005717    1.026162
        male |   1.486982   .1249385     4.72   0.000     1.261208    1.753174
         age |   .9765138   .0037278    -6.23   0.000     .9692347    .9838476
pyacctrati~2 |   .9311817   .0319879    -2.08   0.038     .8705505    .9960357
pyperstudlep |    1.00367    .001687     2.18   0.029     1.000369    1.006982
```

```
pyperstude~s |   .9915395   .0020363    -4.14   0.000     .9875564    .9955386
pyperstudw~e |   1.004946   .0044155     1.12   0.261     .9963293    1.013638
pyperstudb~k |   1.003031   .0051533     0.59   0.556     .9929813    1.013182
pyperstudl~o |   1.007539    .004664     1.62   0.105     .9984393    1.016722
pyperstudm~e |   1.011822   .0039887     2.98   0.003     1.004035     1.01967
       Asian |   .6870643   .2224428    -1.16   0.246     .3642619    1.295928
       Black |   1.005221    .090042     0.06   0.954     .8433655     1.19814
      Latino |    1.15706   .0822469     2.05   0.040     1.006585    1.330031
       Other |   .7920841   .1974389    -0.94   0.350     .4859554    1.291059
   AsianMale |   2.786311    1.97895     1.44   0.149     .6925832    11.20953
   BlackMale |   1.047294   .2024714     0.24   0.811     .7169807    1.529783
  LatinoMale |   .8030651   .1119836    -1.57   0.116     .6110192    1.055472
   OtherMale |   .8723577   .5489856    -0.22   0.828     .2541106     2.99479
-------------+----------------------------------------------------------------
3            |
      tenure |   1.019099   .0037353     5.16   0.000     1.011804    1.026446
       exper |   1.074687   .0052709    14.69   0.000     1.064406    1.085068
        male |   2.220355   .1708488    10.37   0.000     1.909525    2.581781
         age |   .9815451   .0038401    -4.76   0.000     .9740475    .9891005
pyacctrati~2 |   .9741666   .0330226    -0.77   0.440     .9115468    1.041088
pyperstudlep |   .9951662   .0016602    -2.90   0.004     .9919176    .9984253
pyperstude~s |     1.0041   .0019878     2.07   0.039     1.000211    1.008003
pyperstudw~e |   1.009001   .0045182     2.00   0.045     1.000184    1.017895
pyperstudb~k |   .9980233   .0051888    -0.38   0.704     .9879051    1.008245
pyperstudl~o |   1.004972   .0047315     1.05   0.292      .995741    1.014288
pyperstudm~e |   1.004482   .0039818     1.13   0.259      .996708    1.012317
       Asian |    .697027   .2426974    -1.04   0.300     .3522657    1.379205
       Black |   .9737491    .088524    -0.29   0.770     .8148243    1.163671
      Latino |   .9620742   .0695181    -0.54   0.593     .8350297    1.108448
       Other |   .9031867   .2195865    -0.42   0.675     .5608283    1.454538
   AsianMale |   2.367753   1.729709     1.18   0.238     .5656013    9.912028
   BlackMale |   .6619629   .1324714    -2.06   0.039     .4471899    .9798855
  LatinoMale |   .6217931    .085976    -3.44   0.001     .4741866     .815347
   OtherMale |   .6426003   .3836546    -0.74   0.459     .1994087    2.070797
------------------------------------------------------------------------------


---------->  pyschooltype = M

Iteration 0:   log likelihood =  -6875.679
Iteration 1:   log likelihood = -6559.8647
Iteration 2:   log likelihood = -6552.8223
Iteration 3:   log likelihood = -6552.7994
Iteration 4:   log likelihood = -6552.7994

Multinomial logistic regression                 Number of obs   =       6517
                                                LR chi2(38)     =     645.76
                                                Prob > chi2     =     0.0000
Log likelihood = -6552.7994                     Pseudo R2       =     0.0470

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.009917   .0049558     2.01   0.044     1.000251    1.019677
       exper |   1.016292   .0058904     2.79   0.005     1.004812    1.027903
        male |    1.67972   .1261163     6.91   0.000     1.449864    1.946017
         age |   .9814513   .0044584    -4.12   0.000     .9727517    .9902286
pyacctrati~2 |   .8680311   .0428253    -2.87   0.004     .7880254    .9561594
pyperstudlep |    1.00283   .0034175     0.83   0.407     .9961544    1.009551
pyperstude~s |   .9967166   .0026352    -1.24   0.214      .991565    1.001895
pyperstudw~e |   .9892777   .0059265    -1.80   0.072     .9777299    1.000962
pyperstudb~k |   .9879707    .006933    -1.72   0.085     .9744753    1.001653
pyperstudl~o |   .9906815   .0064323    -1.44   0.149     .9781543    1.003369
pyperstudm~e |   1.007732   .0045584     1.70   0.089     .9988375    1.016706
```

```
       Asian |   1.423581   .5811603     0.87   0.387     .6395714    3.168657
       Black |   1.196802   .1223069     1.76   0.079     .9795671    1.462214
      Latino |    1.87495   .2056578     5.73   0.000     1.512251    2.324639
       Other |   .5185199   .1795717    -1.90   0.058     .2630152    1.022233
   AsianMale |   .6255095   .4075329    -0.72   0.471     .1744447      2.2429
   BlackMale |   1.109552   .1845329     0.63   0.532     .8009067     1.53714
  LatinoMale |    .911849   .1401671    -0.60   0.548     .6746498    1.232445
   OtherMale |   2.547936   1.295646     1.84   0.066     .9404714    6.902896
-------------+----------------------------------------------------------------
3            |
      tenure |   1.013925   .0052751     2.66   0.008     1.003639    1.024317
       exper |   1.089482   .0079902    11.69   0.000     1.073933    1.105255
        male |   2.149763   .1829308     8.99   0.000     1.819529    2.539933
         age |   .9525635   .0060287    -7.68   0.000     .9408205    .9644531
pyacctrati~2 |   .8210836   .0480353    -3.37   0.001     .7321333     .920841
pyperstudlep |   .9897337   .0043373    -2.35   0.019     .9812691    .9982714
pyperstude~s |   1.011061   .0031431     3.54   0.000      1.00492     1.01724
pyperstudw~e |   .9999603   .0077637    -0.01   0.996     .9848589    1.015293
pyperstudb~k |   .9827312   .0089189    -1.92   0.055     .9654051    1.000368
pyperstudl~o |   .9888614   .0082672    -1.34   0.180     .9727901    1.005198
pyperstudm~e |   1.000211   .0057925     0.04   0.971     .9889218    1.011629
       Asian |   1.666168   .7992673     1.06   0.287     .6507199    4.266222
       Black |   .8701703   .1212627    -1.00   0.318     .6621936    1.143467
      Latino |   1.617872   .2204822     3.53   0.000     1.238634    2.113222
       Other |   .7570533   .3028286    -0.70   0.487     .3456509    1.658117
   AsianMale |   .3268749    .302489    -1.21   0.227     .0532945    2.004844
   BlackMale |   1.450975   .2990514     1.81   0.071     .9687776     2.17318
  LatinoMale |   .8758654   .1602777    -0.72   0.469     .6118896    1.253723
   OtherMale |   .7966042   .5146063    -0.35   0.725     .2245776    2.825653
------------------------------------------------------------------------------


---------->  pyschooltype = S

Iteration 0:   log likelihood = -7594.3094
Iteration 1:   log likelihood = -7263.8269
Iteration 2:   log likelihood = -7253.3052
Iteration 3:   log likelihood = -7253.0962
Iteration 4:   log likelihood = -7253.0496
Iteration 5:   log likelihood = -7253.0381
Iteration 6:   log likelihood = -7253.0358
Iteration 7:   log likelihood = -7253.0355
Iteration 8:   log likelihood = -7253.0354
Iteration 9:   log likelihood = -7253.0354

Multinomial logistic regression                 Number of obs   =       7854
                                                LR chi2(38)     =     682.55
                                                Prob > chi2     =     0.0000
Log likelihood = -7253.0354                     Pseudo R2       =     0.0449

------------------------------------------------------------------------------
       admin |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |  (base outcome)
-------------+----------------------------------------------------------------
2            |
      tenure |   1.009863   .0038796     2.55   0.011     1.002288    1.017495
       exper |   1.012365    .004794     2.60   0.009     1.003012    1.021805
        male |   1.215762   .0775215     3.06   0.002     1.072934    1.377604
         age |   .9745013   .0038982    -6.46   0.000     .9668909    .9821716
pyacctrati~2 |   .9439258   .0409143    -1.33   0.183     .8670471    1.027621
pyperstudlep |   1.020906   .0046563     4.54   0.000      1.01182    1.030073
pyperstude~s |   .9884174   .0022619    -5.09   0.000     .9839942    .9928605
pyperstudw~e |   .9915862   .0054472    -1.54   0.124      .980967     1.00232
pyperstudb~k |   .9960592   .0062986    -0.62   0.532     .9837903    1.008481
pyperstudl~o |   .9964106   .0058984    -0.61   0.544     .9849169    1.008039
pyperstudm~e |   1.004413   .0041918     1.06   0.291     .9962305    1.012662
```

Asian	1.029841	.3989531	0.08	0.939	.4819708	2.200491
Black	1.518412	.1557297	4.07	0.000	1.241909	1.856478
Latino	1.862044	.1937103	5.98	0.000	1.518583	2.283186
Other	.5717091	.218359	-1.46	0.143	.2704373	1.208603
AsianMale	2.344809	1.54938	1.29	0.197	.6421827	8.561626
BlackMale	1.554299	.2281519	3.00	0.003	1.165705	2.072433
LatinoMale	1.185369	.1599723	1.26	0.208	.9098692	1.544287
OtherMale	1.794956	.9357928	1.12	0.262	.6460757	4.986825
3						
tenure	.9983981	.0047691	-0.34	0.737	.9890945	1.007789
exper	1.073552	.0077602	9.82	0.000	1.05845	1.08887
male	2.085091	.1877987	8.16	0.000	1.74767	2.487657
age	.9581079	.0063963	-6.41	0.000	.9456531	.9707268
pyacctrati~2	1.086659	.0673629	1.34	0.180	.9623359	1.227044
pyperstudlep	1.001273	.0072029	0.18	0.860	.9872548	1.015491
pyperstude~s	1.014261	.0031437	4.57	0.000	1.008119	1.020442
pyperstudw~e	1.02355	.0099644	2.39	0.017	1.004205	1.043268
pyperstudb~k	1.012028	.0111177	1.09	0.276	.9904702	1.034054
pyperstudl~o	1.010742	.0104073	1.04	0.299	.9905489	1.031347
pyperstudm~e	.9880941	.0069847	-1.69	0.090	.9744988	1.001879
Asian	1.312712	.831181	0.43	0.667	.3794956	4.540796
Black	1.148911	.212116	0.75	0.452	.8000818	1.649826
Latino	1.525268	.2567223	2.51	0.012	1.096675	2.12136
Other	.4939821	.3636051	-0.96	0.338	.116726	2.090522
AsianMale	1.97e-06	.000993	-0.03	0.979	0	.
BlackMale	1.139	.2760657	0.54	0.591	.7082937	1.831615
LatinoMale	.8879515	.1810333	-0.58	0.560	.5954543	1.324128
OtherMale	4.23932	3.494246	1.75	0.080	.8427446	21.32536

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